SCAN ME

Research Paper

A CLINICAL STUDY TO EVALUATE THE EFFICACY OF *TILAYASHTIMADHUSHRITA KSHIRA* AS *GANDUSHA* (HOLDING MEDICATED DECOCTION) IN *DANTAHARSHA* (HYPERSENSITIVE TEETH)

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Abstract

Dantaharsha is a morbid sensitiveness of teeth. Person suffering from hypersensitive teeth cannot tolerate *Amla* (sour), *Madhura* (sweet), *Sheeta* (cold) and *Ushna* (hot) and even cold air/wind, moreover experiences painful sensation in teeth. Various treatments have been explained to relieve *Dantaharsha* (hypersensitive teeth) including *Gandusha* (holding decoction), *Kavala* (churning decoction), *Dhuma* (medicated fumes), *Nasya* (nasal douche), *Shirobasti* (oil pouring on head), intake of *Dugdha* (milk) and *Ghrita* (clarified butter) etc. *Acharya Vagbhata* has mentioned *Gandusha* of *Tilayashtimadhu Shrita Ksheera* (prepared decoction) in the management of *Dantaharsha* and *Dantabheda* (sensitivity and pain in teeth) while explaining *Mukharogapratishedha Adhyaya* (chapter related to diseases of mouth). Present clinical trial was aimed to assess the effect of *Tilayashtimadhu Shrita Ksheeta* in patients with disease *Dantaharsha* (hypersensitive teeth). Total 32 patients were registered out of which 30 patients completed the trial. The duration of therapy was 15 days and assessment were done before and after trial followed by statistical analysis. Results: After 15 days of trial, statistically highly significant result (p<0.01) was observed in symptoms like *Sheeta Sparshasaha, Ruksha Sparshasaha, Pravata Sparshasaha, Amla Sparshasaha, Ushna Sparshasa, Danta Chalita* and *Dantaharsha*, the effect on VAS and Schiff cold air sensitivity scale were statistically highly significant.

Key words: *Dantaharsha, Tilyashtimadhushrita Ksheera, Gandusha,* hypersensitive teeth.

INTRODUCTION

Hypersensitivity of teeth has been studied for several years and it is reported as a painful condition that originates when the thickness of the enamel or cement is significantly reduced. Usually the exposed area is subjected to several kinds of stimuli, resulting in sharp acute pain.[1] The approach of treatment in the form of fluorides, nitrates, lasers etc. [2] as desensitizers in modern science are not very satisfactory. Considering the above factors, an effective, less expansive, harmless and convenient treatment for *Dantaharsha* is essential, various treatments have been explained to relieve *Dantaharsha* including *Kavala, Gandusha, Dhuma, Nasya, Shirobasti, Yavagu*, intake of *Dugdha* and *Ghrita* etc. [3,4,5]

Gandusha is one of the effective methods described in daily regimens to be followed in a healthy individual. [6,7] *Vagbhattacharya* ha*s* described *Gandusha* of *Tilayashtimadhu Shrita Ksheera* in the management of *Dantaharsha* and *Dantabheda* while explaining *Mukharogapratishedha Adhyaya.*[8]

Assessment or Scoring to study the effect of *Tilayashtimadhu Kshira* on Hypersensitive teeth was done on the basis of VAS, Schiff Cold Air Sensitivity Scale and *Ayurvedic* variables scored viz. *Sheeta Sparshasaha* (sensitivity to cold articles), *Ruksha Sparshasaha* (sensitivity to dry articles), *Pravata Sparshasaha* (sensitivity to touch), *Amla Sparshasaha* (sensitivity to sour articles), *Ushna Sparshasaha* (sensitivity to hot articles) and *Dant Harsha* (tooth sensitivity).

AIMS AND OBJECTIVES:

1. To study concept of '*Dantaharsha*' elaborately.
2. Evaluation of efficacy of '*Tilayashthimadhushrita Ksheera*' in management of '*Dantaharsha*'.
3. To introduce *Gandusha* as simple, safe, non-invasive, OPD level modality in the management of '*Dantaharsha*'.

MATERIALS AND METHODS:

1. Literary aspect of study was collected form classical Ayurvedic and Modern texts and recent medical journals.

2. Clinical study was done on selected patients from OPD and IPD of Uttaranchal Ayurvedic Hospital, Rajpur, Dehradun, Uttarakhand.

Patients diagnosed with *Dantaharsha* fulfilling the under lined parameters were considered for study. Patients were randomly selected of either sex with features satisfying the inclusion criteria. There was a single group comprising of 32 patients diagnosed with *Dantaharsha* on the basis of fulfilling inclusion and exclusion criteria out of which 02 were dropouts. A fresh 60 ml sample, consisting of *Tilayashtimadhu Shrita Ksheera* was provided to each of volunteer twice a day for *Gandusha.*

Duration of study was 15 days.

Inclusion criteria:

1. Cases of *Dantaharsha* diagnosed with classical features: Teeth incapability to tolerate breeze. Teeth intolerance to *Ushna* (hot), *Sheeta* (cold) or *Amla* (sour) food substances.
2. Patients of age group between 20 to 50 years.

Exclusion criteria:

1. Patients with the age < 20 and > 50 years.
2. Patients complaining pyorrhea, Infective conditions, Acute / severe attrition reaching the pulp, Any trauma due to occlusion, Aggressive periodontitis.
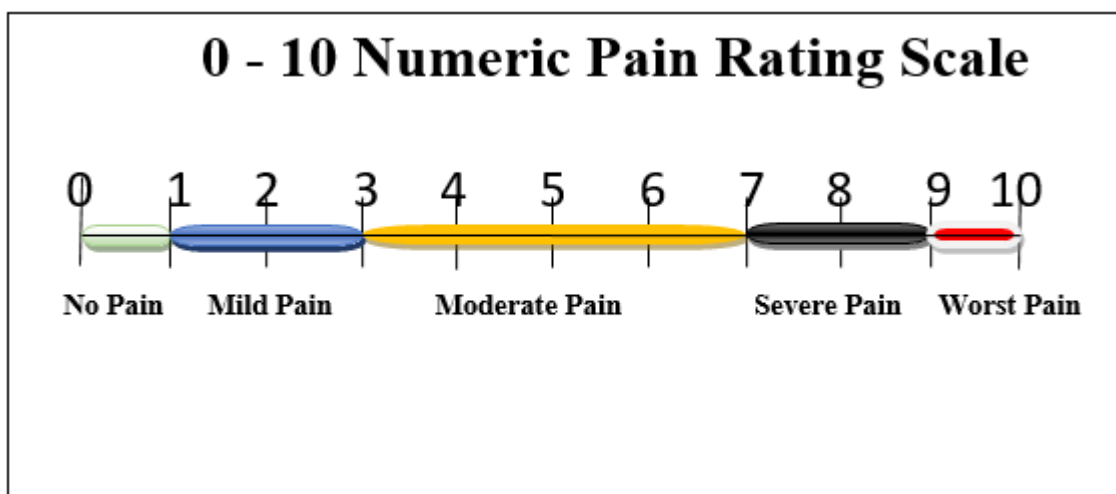
Assessment Criteria:

 Objective Parameters:

Scoring / Assessment on the basis of VAS, Schiff Cold Air Sensitivity Scale:

   1) VAS

   Visual Analogue Scale was used to assess the degree of pain. The extremes of the line representing the limits of pain, a patient experienced from an external stimulus (0 = No pain; 10 = Severe pain) patient were asked to place a mark on the line which indicated the intensity of their current level of sensitivity or discomfort.

0 – 10 Numeric Pain Rating Scale

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

No Pain   Mild Pain   Moderate Pain   Severe Pain   Worst Pain

2) Schiff Cold Air Sensitivity Scale   **SCORE**

- Subject does not respond to air stimulus.   0

- Subject responds to air stimulus but does not requests
  for discontinuation of stimulus.   1

- Subject responds to air stimulus but does not requests
  for discontinuation or moves away from stimulus.   2

- Subject responds to air stimulus, considers stimulus
  to be painful and requests discontinuation of the stimulus.   3

Scoring/ Assessment for *Ayurvedic* Variables: **Score**

1. *Sheeta Sparshasaha* (sensitivity to cold articles)-

- No hypersensitivity of teeth towards cold food articles.   0
- Often complaints hypersensitivity towards food articles.   1
- Continuous hypersensitivity towards cold food articles.   2
- Often skips cold items persisting hypersensitivity for cold food articles.   3

2. *Ruksha Sparshasaha* (sensitivity to dry articles)-

- No hypersensitivity of teeth towards *Ruksha* food articles.   0
- Often complains hypersensitivity towards *Ruksha* food articles.   1
- Continuous hypersensitivity towards *Ruksha* food articles.   2
- Often skips cold items, persistiant hypersensitivity for *Ruksha* food articles. 3

3. *Pravata Sparshasaha* **(sensitivity to touch)-**

- No hypersensitivity of teeth observed while touching or talking.   0
- Often complains hypersensitivity while touching or talking.   1
- Difficulty in talking due to hypersensitive teeth, takes rest in between.   2
- Avoid talking due to hypersensitive teeth.   3

4. *Amla Sparshasaha* **(sensitivity to sour articles)-**

- No hypersensitivity of teeth towards *Amla (sour)* food articles.   0
- Often complains hypersensitivity towards *Amla (sour)* food articles.   1
- Continuous hypersensitivity towards *Amla* (*sour)* food articles.   2
- Patient avoids taking *Amla* (sour) food articles.   3

5. *Ushna Sparshasaha* **(sensitivity to hot articles)-**

- No hypersensitivity of teeth towards *Ushna* (hot) food articles.   0
- Often complaints hypersensitivity towards food *Ushna* (hot) food articles.   1
- Continuous hypersensitivity towards *Ushna* (hot) food articles.   2
- Patient avoids *Ushna* (hot) food articles.   3

6. *Danta Chalita* **(teeth movement)-**

- Normal movement when force is applied.   0
- Mobility greater than physiologic.   1
- Tooth can be moved up to 1 mm or more in lateral direction & inability to depress the tooth in vertical direction.   2
- Tooth can be moved up to 1 mm or more in lateral direction & ability to depress the tooth in vertical direction.   3

7. *Dant Harsha* **(tooth sensitivity)-**

- No teeth sensitivity observed.   0
- Teeth sensitive to one of the stimuli viz. *Sheeta, Ruksha, Pravata, Ushna* and *Amla.*   1
- Teeth sensitive to 2-4 of the stimuli viz. *Sheeta, Ruksha, Pravata, Ushna,* and *Amla.*   2
- Teeth sensitive to all 5 of the stimuli viz. *Sheet, Ruksha, Pravata, Ushna* and *Amla.*   3

To assess the effect of therapy objectively, all the signs and symptoms were given scoring depending upon their severity. Complete remission is100%, Marked Improvement for 75% to < 100%, moderate improvement for 50% to < 75%, mild improvement for 25% to < 50%, No improvement for 0% to < 25% and Worsened if symptoms increases.

STATISTICAL ANALYSIS:

The information gathered on the basis of above observations was subjected to statistical analysis. Student paired 't' Test was carried out for all non-parametric data (i.e. for subjective criteria) to analyze the effect of therapy in the group.

The obtained results were interpreted as:

Insignificant $p > 0.05$

Significant $p < 0.05$

Highly Significant $p < 0.01$

OBSERVATION AND RESULTS:

Table No.01: Showing Questionnaire wise distribution of total 32 patients.

S. No.	Questionnaire	Yes		No	
		No. of Patients	%	No. of Patients	%
1.	Does your gum bleed when you brush	09	28.12	23	71.87
2.	Are your teeth sensitive to cold, hot, sweets or pressure	25	78.12	07	21.87
3.	Have you had any peridontal gum treatment	09	28.10	23	71.87
4.	Have you ever had orthodontic treatment	03	09.37	29	90.62
5.	Do you wear removable dental applicants	00	00	32	100
6.	Do you have headache, earache or neck pain	04	12.50	28	87.50
7.	Is the pain spontaneous	24	75.00	08	28
8.	Does the pain wake you up at night	05	15.62	27	84.37

Table No.02: **Showing Appearance of Teeth of total 32 patients.**

Appearance of Teeth	Total no. of Patients	Percentage
Satisfactory	06	18.75 %
Good	06	18.75 %
Bad	20	62.50 %

Table No.03: Showing Area of Teeth bothering patient total 32 number.

Area of Teeth bothering	Total no. of Patients	Percentage
Top Right	12	37.50 %
Top Left	11	34.37 %
Top Front	29	90.65 %
Bottom Right	08	25.00 %
Bottom Left	01	03.12 %
Bottom Front	24	75.00 %

Table No.04: Showing Character of Pain Described by total 32 patients.

Character of Pain	Total no. of Patients	Percentage
Pulsating	00	00.00 %
Dull	05	15.63 %
Sudden	26	81.25 %
Constant	26	81.25 %
Nagging	03	09.37 %
Sharp	29	90.62 %
Off/On	03	09.37 %

Table No.05: Showing what makes patient hurt more.

Most hurting Factor	Number of Patients	Percentage
Heat	01	03.12 %
Cold	19	59.40 %
Chewing/ Biting	21	65.62 %
Air	13	40.62 %
Sweets	24	75.00 %

Table No.06: Showing how long does the pain lasts.

How long does the pain lasts	Total no. of Patients	Percentage
<2 hrs	23	71.90 %
02-06 hrs	09	28.12 %
06-12 hrs	00	00.00 %
12-18 hrs	00	00.00 %
Whole day	00	00.00 %

Table No.07: Showing Visual Analogue Scale wise distribution of total 32 patients.

VAS wise distribution	Total no. of Patients	Percentage
0 = No Pain	00	00.00 %
1 = Mild Pain	00	00.00 %
2 = Mild Pain	00	00.00 %
3 = Moderate Pain	01	03.13 %
4 = Moderate Pain	04	12.50 %
5 = Moderate Pain	06	18.80 %
6 = Moderate Pain	06	18.80 %
7 = Severe Pain	07	21.90 %
8 = Severe Pain	06	18.80 %
9 = Severe Pain	02	06.25 %
10 = Worst Pain	00	00.00 %

Table No.08: Showing Schiff Cold Air Sensitivity Scale wise distribution of patients.

SCASS Criteria	Total no. of Patients	Percentage
Subject does not respond to air stimulus	00	00.00 %
Subject responds to air stimulus but does no requests for discontinuation of stimulus	08	25.00%

Subject responds to air stimulus and requests discontinuation or moves away from stimulus	18	56.25%
Subject responds air stimulus, or considers stimulus to be painful and requests discontinuation of the stimulus	06	18.80%

Table No.09: Showing *Sheeta Sparshasaha* Grading wise distribution of total 32 patients.

Sheeta Sparshasaha Signs	Total no. of Patients	Percentage
No hypersensitivity of teeth towards cold food article	00	00.00 %
Often complaints hypersensitivity towards cold food articles.	03	09.37 %
Continuous hypersensitivity towards cold food article	13	40.62 %
Often skips dry items, persisting hypersensitivity for cold food articles	12	37.50%

Table No.10: Showing *Ruksha Sparshasaha* Grading wise distribution of total 32 patients.

Ruksha Sparshasaha (Dry) Signs	Total Patients	Percentage
No hypersensitivity of teeth towards *Ruksha* food articles.	00	00.00 %
Often complaints hypersensitivity towards *Ruksha* food articles.	14	43.75 %
Continuous hypersensitivity towards *Ruksha* food articles.	09	28.12 %
Often skips dry items, persisting hypersensitivity for *Ruksha* food articles	01	03.12 %

Table No.11: Showing *Pravata Sparshasaha* Grading wise distribution of total 32 patients.

Pravata Sparshasaha Signs	Total Patients	Percentage
No hypersensitivity of teeth observed while talking.	00	00.00 %
Often complaints of hypersensitivity while talking.	04	12.50 %
Difficulty in talking due to hypersensitive teeth takes rest in between	14	43.75 %
Avoid talking due to hypersensitive teeth	04	12.50 %

Table No.12: Showing *Amla Sparshasaha* Grading wise distribution of total 32 patients.

Amla Sparshasaha (Sour) Signs	Total no. of Patients	Percentage
No hypersensitivity of teeth towards *Amla* food articles.	16	50.00 %
Often complaints hypersensitivity towards *Amla* food articles.	08	25.00 %
Continuous hypersensitivity towards *Amla* food articles.	04	12.50 %
Patient avoids taking *Amla* food articles.	00	00.00 %

Table No.13: Showing *Ushna Sparshasaha* Grading wise distribution of total 32 patients.

Ushna Sparshasaha (Hot) Signs	Total no. of Patients	Percentage
No hypersensitivity of teeth towards *Ushna* food articles.	26	81.25 %
Often complaints hypersensitivity towards *Ushna* food articles.	06	18.75 %
Continuous hypersensitivity towards *Ushna* food articles.	00	00.00 %
Patient avoids taking *Ushna* food articles.	00	00.00 %

Table No.14: Showing *Danta Chalita* Grading wise distribution of total 32 patients.

Danta Chalita Signs	Total no. of Patients	%
Normal movement when force is applied.	17	53.12 %
Mobility greater than physiologic.	10	31.25 %
Tooth can be moved up to 1 mm or more in lateral direction. Inability to depress the tooth in vertical direction.	05	15.62 %
Tooth can be moved upto 1 mm or more in lateral direction. Ability to depress the tooth in vertical direction	00	00.00%

Table No.15: Showing *Dantaharsha* Grading wise distribution of total 32 patients.

Dantaharsha Signs	Number of Patients	Percentage
No teeth hypersensitivity observed.	00	00.00 %
Teeth sensitive to 1 of the stimulus Viz. *Sheet, Ruksha, Pravata, Amla* and*Ushna.*	12	37.50%
Teeth sensitive to 2-4 of the stimuli Viz. *Sheet, Ruksha, Pravata, Amla* and *Ushna.*	19	59.37%
Teeth sensitive to all 5 of the stimuli Viz. Sheet, *Ruksha, Pravata, Amla* and *Ushna.*	01	03.12%

Table No.16: Effect of therapy on VAS and Schiff cold air sensitivity scale (SCASS).

Assessment Criteria	Mean		Mean Difference	% Change	S.D. ±	S.E. ±	't'	P
	B.T.	A.T.						
VAS (n= 30)	6.0	2.1	3.8	65.00	1.15	0.21	17.99	<0.01
SCASS (n= 30)	1.88	0.53	1.4	71.76	0.77	0.14	09.95	<0.01

The effect of therapy on VAS, the mean was 6.00 before treatment and 2.1 after treatment with mean difference 3.8 and percentage change was 65.00%, in SCASS, the mean was 1.88 before treatment and 0.53 after treatment with mean difference 1.4 and percent change was 71.76% which was statistically extremely significant (p<0.01) in both .

Table No.17: Effect of therapy on *Ayurvedic* Criteria:

Ayurvedic Criteria	Mean		Mean Difference	% Change	S.D. ±	S.E. ±	't'	P
	B.T.	A.T.						
Sheeta Sparshasaha (n=26)	2.30	0.57	1.73	75.00	0.60	0.11	14.61	<0.01
Ruksha Sparshasaha (n= 23)	1.43	0.478	0.95	66.66	0.57	0.11	07.97	<0.01
Pravata Sparshasaha (n= 21)	2.00	0.47	1.55	76.19	0.60	0.13	11.74	<0.01
Amla Sparshasaha (n=12)	1.36	0.36	1.00	73.33	0.44	0.12	07.74	<0.01
Ushna Sparshasaha (n= 06)	1.00	0.16	0.83	83.33	0.40	0.16	05.00	<0.01
Danta Chalita (n=15)	1.35	0.21	1.21	84.21	0.57	0.14	08.12	<0.01
Dantaharsha (n= 30)	1.66	0.33	1.33	80.00	0.72	0.13	10.13	<0.01

Sheeta Sparshasaha was improved by 75.00 % which is statistically highly significant. *Ruksha Sparshasaha* and *Pravata Sparshasaha* were improved by 66.66 % and 76.19% which was statistically highly significant. *Amla Sparshasaha* and *Ushna*

Sparshasaha were improved by 73.33 % and 83.33 % which was statistically highly significant. *Danta chalita* and *Dantaharsha* were improved by 84.21% and 80.00% which was statistically highly significant.

DISCUSSION:

Maximum patients were having teeth sensitive to cold, hot, sweet or pressure with spontaneous pain, as *Doshas* were observed to be in *Sanchaya* and *Prasara* condition and other symptoms may aggravate with progress of disease. Teeth at front, top or bottom, have first contact and are subjected directly to alternate hot and cold foods in comparison to other teeth. It was observed that maximum 23 (71.90%) patients had pain that lasts for less than two hours. Dentine gets expose and nerve endings gets sensitive to any stimulus like sweets, cold, air etc. with sharp, sudden pain that remains for two to six hours. Eating ice creams, having cold drinks or cold water was aggravating pain and patients were seen avoiding these items. Patients who had continuous hypersensitivity towards *Ruksha* (dry) food articles and used to skip dry items like biscuits, rusks etc. Patients were observed that they avoid talking due to pain in sensitive teeth. Difficulty in talking due to *Mukha* disorders is a characteristic of *Pittaj Prakriti* (Su.Sh. 4/69). *Dantaharsha* is *Vata-Pittaj* disease. [9] *Amla* (sour) food articles. Sensitivity towards *Amla* food articles is only found with patients severely affected teeth. Patients often complaints hypersensitivity towards *Ushna* (hot) food articles. *Ushna Guna* is supposed to alleviate *Vata Dosha* and aggravates *Pitta simultaneously. Dantaharsha* is a *Vata-Pittaj* disease. Taking *Ushna* (hot) food article becomes *Upshaya* of *Dantaharsha* in *Vata* dominant *Dantaharsha*. [10] Whereas it becomes *Anupshaya* in *Pitta* dominant *Dantaharsha.* [11] *Danta Chalita* was observed in few patients only but psychologically patients were complaining more degree of movement then what was actually observed.

Maximum ingredients of *Tilayashtimadhushrita Ksheera* have *Madhura Rasa*, *Guru* and *Snigdha Guna, Madhura Vipaka*, *Ushna Virya*. It has *Vatashamaka*, *Vedana Sthapak* properties which are effective to control *Dantaharsha*. *Ashtanga Hridya* has described *Gandusha* of *Tilayashtimadhu Shrita Ksheera* in the management of *Dantaharsha*. [12] *Balya, Dantya, Snehana, Tarpaka, Jivniya, Rasayana Karma of Tila* and *Ksheera* nourishes *Asthi* and *Majja Dhatu* which improves sensitivity of teeth.

Out of 30 patients, 12 patients (40.00%) shown Marked improvement, 17 patients (56.66%) shown moderate improvement and 1 patient (3.33%) shown mild improvement. However, no patients show complete improvement.

CONCLUSION:

- *Dantaharsha*, is an emerging disease in young and middle age group and residing till the age, it's not treated. It involves every class, *Vataja Ahara*, mixed diet, *Vismashana*, smoking, alternate use of hot and cold food items are the causes behind *Dantaharsha*. *Vata-Pittaja Prakriti* is more prone to *Dantaharsha*.

- Mostly top right, top left and top front area is affected in *Dantaharsha*. Sensitivity to hot, cold, sweets and pressure along with spontaneous, sudden, constant pain is observed which last for few minutes to even 6 hours in the patients of *Dantaharsha*.

- Sweet and cold are the most hurting factor among the factors for *Dantaharsha*

- The factors in *Dantaharsha* increases with progression of disease and the sequence observed towards addition of sensitivity factors was *Sheeta, Pravata, Amla* and *Ushna*.

- *Tilyashtimadhushrita Ksheera* has shown highly significant results on *Sheeta, Ruksha, Pravata, Amla, Ushna Sparshasaha, Danta Chalita* and *Dantaharsha*. *Gandusha* as procedure is simple, safe, non-invasive, OPD level modality in the management of *Dantaharsha.*

- Awareness should be brought about in the society at the early stage of life regarding oral hygiene methods like *Gandusha, Dantadhavana, Kavala, Dhumapana, Tambula Sevana*, avoiding intake of acidic food and drinks that aggravate acidity in the oral cavity leading for the primary prevention of oral and dental disorders.

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