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## “A COMPARATIVE CLINICAL STUDY TO EVALUATE THE EFFICACY OF BHUJANGASANA AND PASHCHIMOTTANASANA IN AGNIMANDYA ”

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### ABSTRACT

*Agnimandya* can be considered as loss of function of *Agni*. It may occur as a symptom or as a disease itself and may provide background for further progression of the disease. *Asana* is one of the components of *Yoga*, which is very commonly applied for health benefits. Even though these are explained in the classical texts but are not in practice due to lack of awareness of their benefits. So keeping these facts in mind, the present study was selected to evaluate the efficacy of *Bhujangasana* and *Pashchimottanasana* in *Agnimandya*. 40 patients fulfilling the diagnostic criteria were selected and randomly allocated into two groups i.e. Group A (*Bhujangasana*) and Group B (*Pashchimottanasana*). The patients were assessed before treatment, after the treatment (30<sup>th</sup> day) and on follow up (45<sup>th</sup> day). The effect of the treatment was assessed on the basis of gradation of *Abhyavaharana Shakti* (food intake capacity), *Jarana Shakti* and improvement in chief complaints.

**RESULTS:** Both *Bhujangasana* and *Pashchimottanasana* showed statistically significant effect in *Abhyavaharana shakti*, *Jarana Shakti*, *Udara Gaurava*, *Shiro Gaurava*, *Gatra Sadana* and *Kshudamandya*. On comparative analysis between the groups, it showed no statistically significant difference.

**KEYWORDS:** *Agni*, *Agnimandya*, *Bhujangasana*, *Pashchimottanasana*

### INTRODUCTION

According to Ayurveda, *Agni* is said to be responsible for *Bala*, *Varna* and *Ayu* and it is given utmost importance. By properly maintaining *Agni*, one can get long and healthy life<sup>1</sup>. If *Agni* is in normal physiology, the body will be maintained in healthy state and if the condition of the *Agni* is abnormal, the person may have to face disease. *Mandagni* is considered as main cause for all diseases<sup>2</sup>. Nowadays, due to busy and stressful life the people are following irregular *Ahara* and *Vihara* which in turn leads to disease like *Agnimandya*.

*Agnimandya* can be considered as loss of function or malfunctioning of *Agni*. It may occur as a symptom in many diseases or as a disease itself and may provide background for further progression of the disease. Thus to prevent further progression, it is necessary to treat the disease in very early stage. Since *Jataragni* is considered as *Pradhana* out of all other *Agni*, while treating *Agnimandya*, *Jataragni* should be considered as a matter of prime importance<sup>3</sup>.

*Asana* is one of the components of *Yoga*, which is very commonly applied for health benefits. *Yoga* has the potential to be used for various brain – gut disorders. Changing lifestyle is one of the leading causes which have bad effect on digestion. *Asana* can be taken as one of the healthy way of changing lifestyle.

*Gheranda Samhita* and *Hatha Yoga Pradeepika* have mentioned about the *Asana* which are having the reference for *Agni Deepana* Property like *Pashchimottanasana*<sup>4</sup>, *Matsyendrasana*<sup>5</sup>, *Bhujangasana*<sup>6</sup> and *Makarasana*<sup>7</sup>. *Asana* is a simple *yoga* technique which can be practiced daily with minimum efforts. Even though these are explained in the classical texts but are not in practice due to lack of awareness of their benefits.

So keeping these facts in mind, the present study was conducted to evaluate the efficacy of *Bhujangasana* and *Pashchimottanasana* in *Agnimandya*.

#### OBJECTIVES –

- To evaluate the efficacy of *Bhujangasana* in *Agnimandya*
- To evaluate the efficacy of *Pashchimottanasana* in *Agnimandya*
- To compare the efficacy of *Bhujangasana* and *Pashchimottanasana* in *Agnimandya*

#### HYPOTHESIS

- $H_0$  - There is no statistically significant result with either of *Bhujangasana* and *Pashchimottanasana* in *Agnimandya*.
- $H_1$  - There is statistically significant result with either of *Bhujangasana* and *Pashchimottanasana* in *Agnimandya*.
- $H_2$  – There is statistically more significant result with *Bhujangasana* than *Pashchimottanasana* in *Agnimandya*.
- $H_3$  – There is statistically more significant result with *Pashchimottanasana* than *Bhujangasana* in *Agnimandya*.

#### METHODOLOGY

**Sample source:** Patients of *Agnimandya* were selected from the IPD and OPD of Alva's Ayurveda Medical College, Alva's Educational Campus, camps and other referrals.

#### METHOD OF COLLECTION OF DATA

**Study design:** Randomized comparative clinical study

**Sample size:** A minimum of 40 patients of *Agnimandya* irrespective of gender, religion, occupation, marital status, socio economic status, educational status and fulfilling the diagnostic and inclusion criteria were selected for the study. Selected patients were randomly divided into two groups –Group A and Group B with 20 patients in each group.

**Sampling method:** Simple Random Sampling method

#### Diagnostic criteria:

Diagnosis was done on the basis of presence of the following features:-

- *Udara Gaurava*
- *Shiro Gaurava*
- *Praseka*

- *Gatrasadana*
- *Kshudamandya*

### INCLUSION CRITERIA:

1. Patients with signs and symptoms of *Agnimandya*
2. Patients of either gender
3. Age group 16-45 years

### EXCLUSION CRITERIA:

1. Patients suffering from any systemic illness
2. Patients having any established pathology of gastro intestinal tract
3. Pregnant and Lactating women

### INTERVENTION

**Table No. 1 INTERVENTION**

GROUPS	ASANA	TIMINGS	DURATION
GROUP A	<i>BHUJANGASANA</i>	-2 Sessions: Morning and Evening in empty stomach -4 rounds in each session	30 days
GROUP B	<i>PASHCHIMOTTANASANA</i>	-2 Sessions: Morning and Evening in empty stomach -4 rounds in each session	30 days

#### Group A - *BHUJANGASANA*

- Lie down flat on abdomen and rest forehead on the floor
- Slowly bring both the legs close together
- Move the arms so that they are folded at the elbow and palms close to chest
- Inhale and lift head, chest and abdomen (till umbilicus)
- Be in the position for 10 counts
- Exhale and slowly come back to prone position and relax

#### Group B - *PASHCHIMOTTANASANA*

- Sit on the floor with the legs stretched, back straight, palms on the knees and relax the whole body.
- Inhale and raise the both hands and bend backwards
- While exhaling slowly bend head and trunk forward and hold the big toes with the fingers
- Maintain the posture for 10 counts

- Then slowly Inhale and raise head and both the hands
- Exhale and release the hands

### OBSERVATION PERIOD

Patient was observed before the treatment and on 30<sup>th</sup> day

### FOLLOW UP PERIOD

Follow up was done on 45<sup>th</sup> day (15 days after the treatment)

### TOTAL STUDY DURATION

45 days

### ASSESSMENT CRITERIA

The main criteria for assessment were

- *Abhyavaharana Shakti* (food intake capacity)
- *Jarana Shakti* (digestion capacity)
- Improvement in chief complaints

The scoring was given to each criteria and was assessed before and after the intervention

#### Abhyavaharana Shakti

Table No.2 Grading of *Abhyavaharana Shakti*

Lakshana	Score
Person not at all taking food	0
Person taking food in less quantity once in a day	1
Taking food in less quantity twice a day	2
Taking food in moderate quantity twice a day	3
Taking food in normal quantity twice or thrice a day	4
Taking food in excessive quantity twice or thrice a day	5

#### Jarana Shakti

*Jeerna Ahara Lakshana* (signs of proper digestion) were seen (MA .NI.6/4).

*Utsaha* (Enthusiasm),

*Laghuta*(Lightness),

*Udgara Shuddi* (Clear Eructation),

*Kshudha*(Hunger)-*Trishna* (Thirst), and

*Yathochita Malotsarga* (Proper Bowel Movements)

**Table No.3 Grading of *Jarana Shakti***

Lakshana	Score
Absence of all the symptoms	0
Presence of one symptom	1
Presence of two symptoms	2
Presence of three symptoms	3
Presence of four symptoms	4
Presence of all the five symptom	5

**Improvement in chief complaints****A) *Udara Gaurava*****Table No.4 Grading of *Udara Gaurava***

Lakshana	Score
Absent	0
Present upto 1 ½ hour after meal	1
Present upto 1½-3 hours after meal	2
Present >3 hours after meal	3

**B) *Shiro Gaurava*****Table No.5 Grading of *Shiro Gaurava***

Lakshana	Score
Absent	0
Present upto 1 ½ hour after meal	1
Present upto 1 ½-3 hours after meal	2
Present >3 hours after meal	3

C) *Praseka*Table No.7 Grading of *Praseka*

Lakshana	Score
Absent	0
Present but no inconvenience	1
Has to spit once or twice	2
Spits continuously, hampering his/her speech or dribbling of saliva at night	3

D) *Gatrasadana*Table No.6 Grading of *Gatrasadana*

Lakshana	Score
Absent	0
Present upto 1 ½ hour after meal	1
Present upto 1 ½-3 hours after meal	2
Present >3 hours after meal	3

E) *Kshudamandya*Table No.8 Grading of *Kshudamandya*

Lakshana	Score
Absent	0
Hunger after 4 to 7 hours of taking meal	1
Hunger after 8 to 11 hours of taking meal	2
Hunger after 12 hours of taking meal	3

**OBSERVATIONS AND RESULTS****DEMOGRAPHIC DATA****Table no 7**

Age (in years)	GROUP A		GROUP B		TOTAL	
	No.	%	No.	%	No.	%
16-25	5	25	8	40	13	32.5
26-35	10	50	7	35	17	42.5
36-45	5	25	5	25	10	25

Gender	Group A		Group B		TOTAL	
	No	%	No	%	No	%
MALE	8	40	5	25	13	32.5
FEMALE	12	60	15	75	27	67.5

RELIGION	Group A		Group B		Total	
	No	%	No	%	No	%
Hindu	18	90	17	85	35	87.5
Muslim	1	5	2	10	3	7.5
Christian	1	5	1	5	2	5

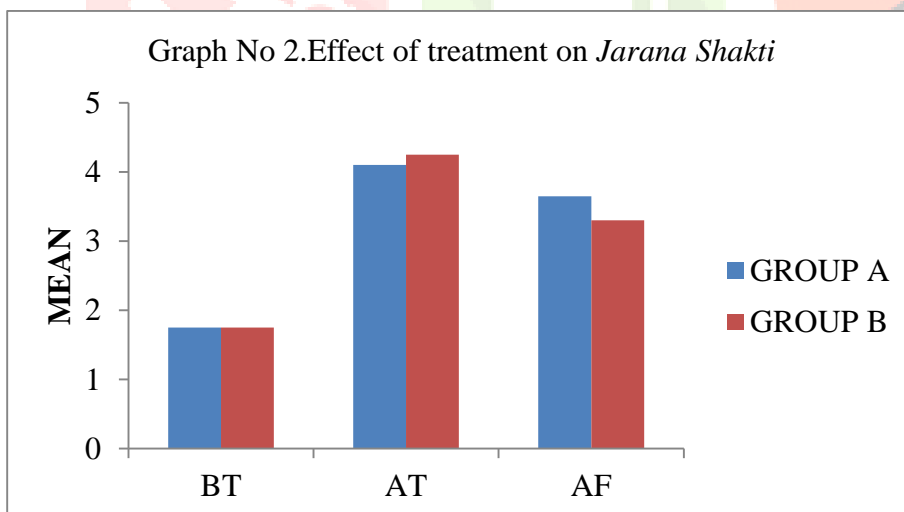
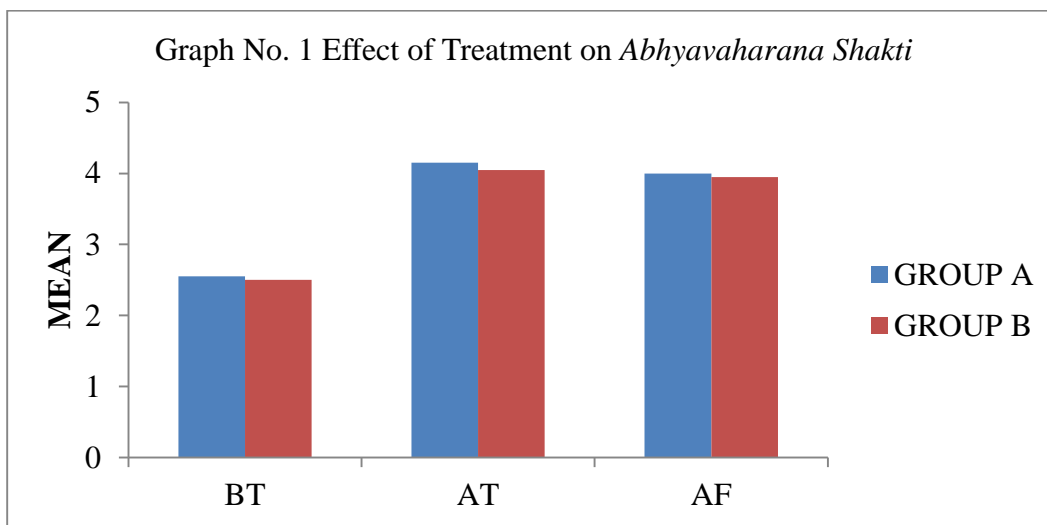
	Group A		Group B		Total	
	No	%	No	%	No	%
Vegetarian	7	35	8	40	15	37.5
Mixed	13	65	12	60	25	62.5

RASA	Group A		Group B		Total	
	No	%	No	%	No	%
Madhura	9	45	10	50	19	47.5
Amla	2	10	1	5	3	7.5
Lavana	1	5	1	5	2	5
Katu	5	25	5	25	10	25

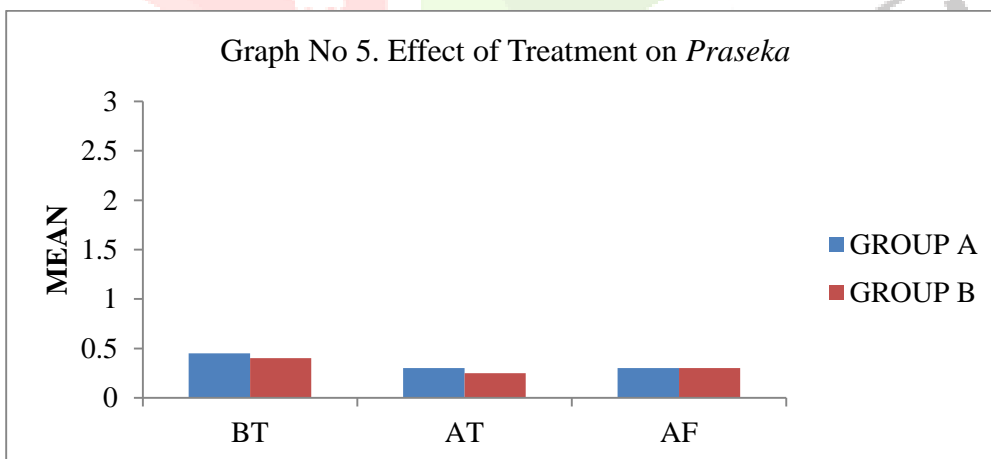
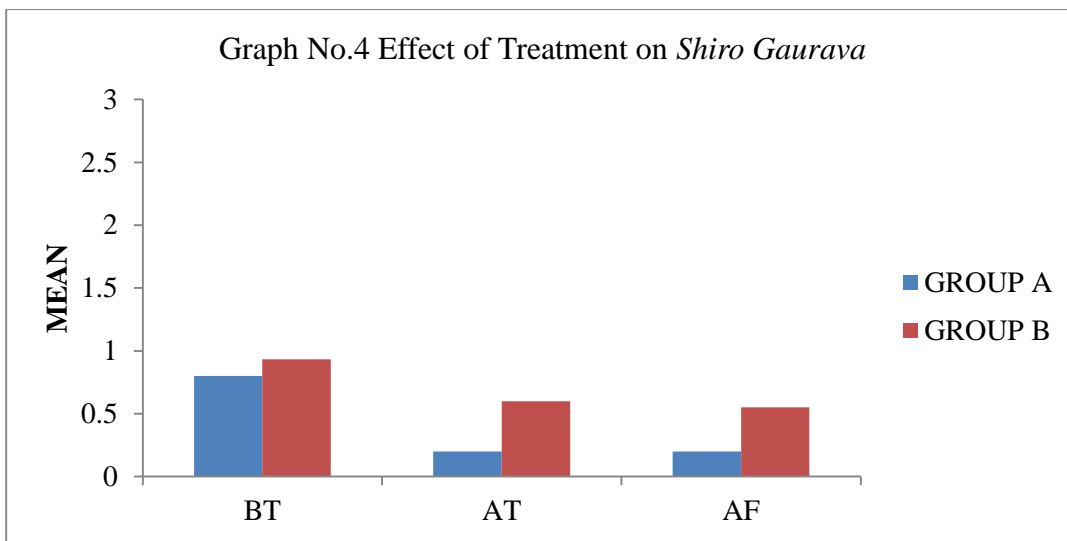
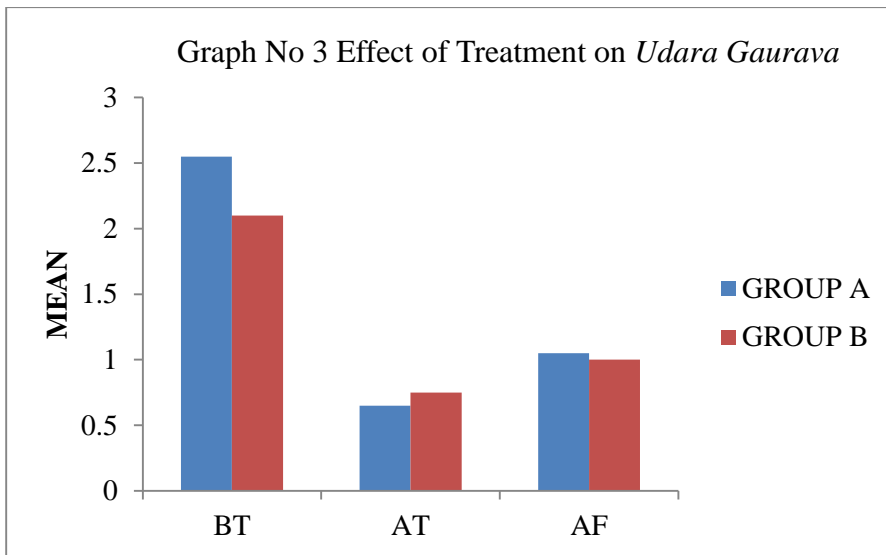
Tikta	2	10	2	10	4	10
Kashaya	1	5	1	5	2	5

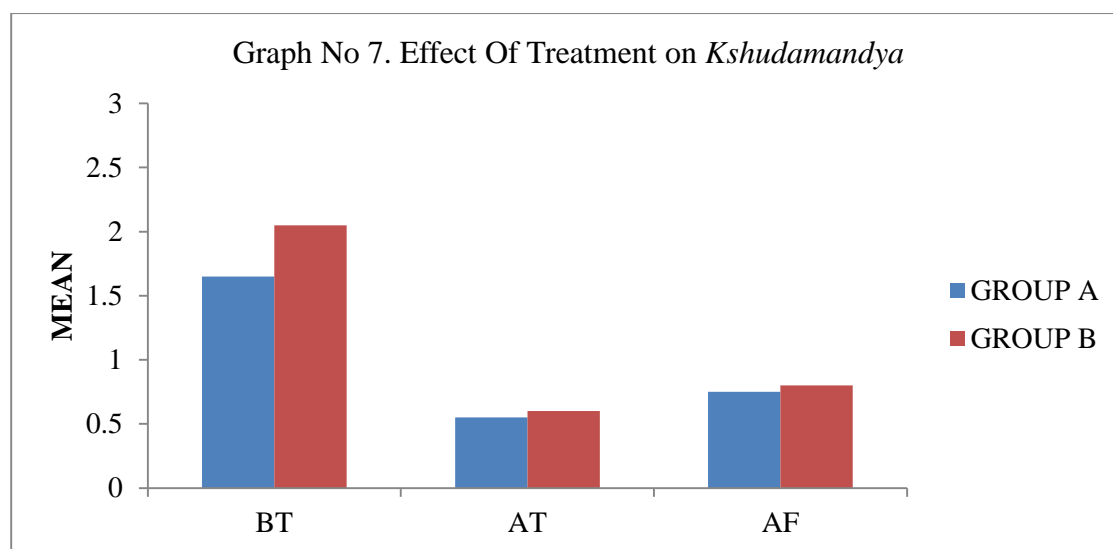
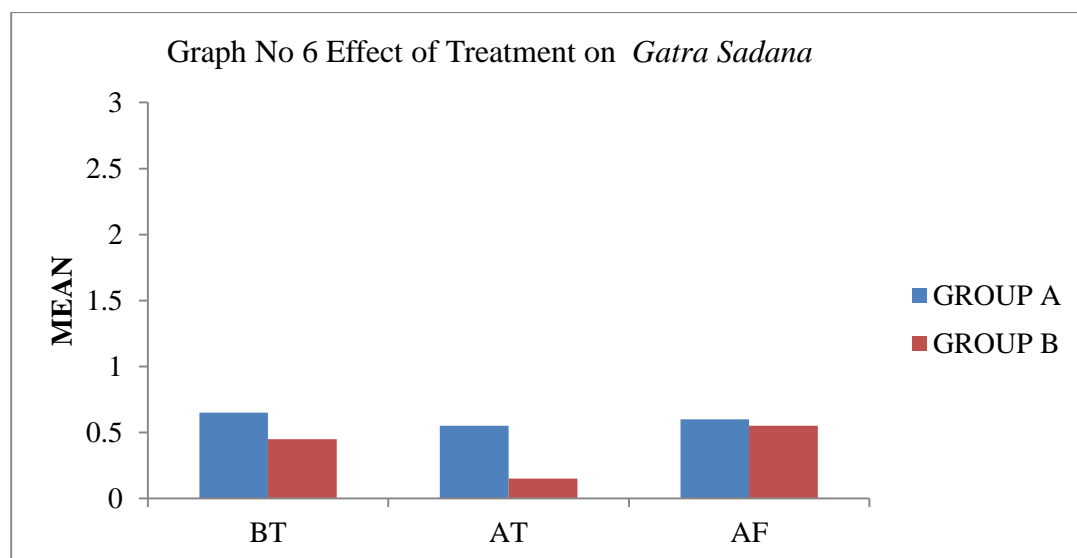
	Group A		Group B		Total	
	No	%	No	%	No	%
Tea	8	40	6	30	14	35
Coffee	8	40	10	50	18	45
No habits	4	20	4	20	8	20

## RESULTS









#### COMPARATIVE RESULTS OF GROUP A and GROUP B

**Table no 8**

PARAMETERS	GROUP A	GROUP B	MANN-WHITNEY TEST	
			T value	P value
Abhyavaharana shakti	4	4	399.500	0.786
Jarana shakti	4	4	383.000	0.472
Udara gaurava	1	1	394.500	0.684
Shiro Gaurava	0	0	378.00	0.392
praseka	0	0	412.500	0.957
Gatra sadana	0.5	0	481.500	0.054
kshudamandya	1	1	400.000	0.979

The difference in the median values between the two groups is not great enough to exclude the possibility that the difference is due to random sampling variability; there is not a statistically significant difference between the groups in all parameters.

## DISCUSSION

### EFFECT OF TREATMENT

#### 1. ABHYAVAHARANA SHAKTI

*Abhyavaharana Shakti* is the capacity of food intake or power of ingestion. It is mentioned under the *Dasha Vidha Pareeksha* to assess the *Ahara Shakti*.<sup>8</sup> It always differs from person to person. It directly depends on digestive fire. As there is loss of digestive fire in *Agnimandya* the capacity of food intake will also be reduced. Here in this study the test showed significant changes in *Abhyavaharana Shakti* in both the groups after treatment with P value <0.001

#### 2. JARANA SHAKTI

*Jarana Shakti* is the Digestion capacity. It is mentioned under the *Dasha Vidha Pareeksha* to assess the *Ahara Shakti*.<sup>9</sup> *Acharya Charaka* has mentioned *Jarana Shakti* as a *Anumanagamya Bhava* to assess the *Agni*. Here in this study the test showed significant changes in *Jarana Shakti* in both the groups after treatment with P value <0.001.

#### 3. UDARA GAURAVA

*Udara Gaurava* is one of the chief complaints in *Agnimandya*. It may be due to the *Kapha Vriddi*. As there is *Agnimandya* the time taken for digestion of food is increased resulting in heaviness of abdomen.

Here in this study the test showed significant effect in decreasing the *Udara Gaurava* in both the groups after treatment with P value <0.001

#### 4. SHIRO GAURAVA

Here in this study the test showed significant effect in decreasing the *Shiro Gaurava* after treatment in Group A with P value 0.004 and in Group B with P value 0.027.

#### 5. PRASEKA

Test showed no significant changes in this symptom after treatment.

#### 6. GATRASADANA

*Gatrasadana* is *Angasada*. It can be correlated as malaise or lethargy. As there is *Kapha virddi* in *Agnimandya*, this symptom is seen.

Here in this study the test showed significant effect in decreasing the *Gatrasadana* after treatment in Group A with P value <0.001 and in Group B with P value <0.001

#### 7. KSHUDAMANDYA

It is main symptom in *Agnimandya*. As there is *Kapha vriddi* and *Agni* is reduced in this disease, the patient will not feel hunger or hunger will be delayed. Here in this study the test showed significant effect in decreasing *Kshudamandya* in both the groups after treatment with P value <0.001

### **PROBABLE MODE OF ACTION OF ASANA ON DIGESTIVE SYSTEM <sup>10</sup>**

- The direct effect of *Asana* on the digestive system is that it's like an internal massage of the digestive tract, including the stomach area, intestines, liver, and pancreas. This massage (stretching and contracting muscles alternately) ensures the flow of blood and oxygen, and also strengthens the muscles of the internal organs. Metabolic processes are activated in organs and tissues.
- A large amount of enzymes are generated in order to support the absorption of nutrients.
- The visceral organs are made of smooth muscles. *Asana* mainly work on the trunk area and the smooth muscles of the visceral organs.

- The mild, passive and alternate changes of pressure in the internal organs results in stimulation of the autonomic nervous system as the walls of these organs undergo a mild stretching and relaxation alternately.
- During the maintenance phase of the *Asana* the pressure in the abdominal cavity changes which is reflected on the visceral organs like stomach and colon. When the normal breathing is continued while maintaining the posture there is an alternate positive and negative pressure on the visceral organs. This not only improves the blood circulation in that area but also stimulates the visceroreceptors due to stretching of the walls of these organs.
- Forward bending aids in the stimulation of a sluggish colon.
- Rejuvenation of cells of pancreas due to abdominal stretching during *Asana*, which may increase metabolism.
- *Asana* also helps in elimination of waste products from the body by engaging the muscles involved in the peristaltic activity.
- *Asana* seems to work by enhancing the vagus nerve tone and parasympathetic tone.
- It helps in overall gut health by reducing stress, promoting blood flow, and physical movement that helps in improving the motility of the gastrointestinal tract.

### ***Bhujangasana*** <sup>11</sup>

- It regulates *Samana Vayu* and *Pitta*
- Stimulates *Agni*.

### ***Pashchimottanasana*** <sup>12</sup>

- It regulates *Vayu* and *Pitta*
- Reduces the *Kapha*
- It stimulates the digestive tract through the squeeze and release effect. This motion improves digestion.

### **CONCLUSION**

- As per the results within the group, the tested statistics showed highly significant results in both the groups (*Bhujangasana* and *Pashchimottanasana*) for *Abhyavaharana shakti*, *Jarana Shakti*, *Udara Gaurava*, *Shiro Gaurava*, *Gatra Sadana* and *Kshudamandya*.
- On comparative analysis between the groups, it showed no statistically significant difference. Hence both the groups are found effective in the management of *Agnimandya*.
- Thus we conclude that: Null hypothesis  $H_0$  is rejected and the alternate hypothesis  $H_1$  is accepted -  $H_1$  - There is statistically significant effect with either of *Bhujangasana* and *Pashchimottanasana* in *Agnimandya*

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