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To study the efficacy of *Makarasana* as an *Agnivardhana Karma*

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ABSTRACT

Generally in young age, keeps on doing *Mithya Aahara* and *Vihara* which leads to *Agnidusti* and which become cause of various diseases. As they work restless, their sedentary habits and stress full lifestyle. They are ought to do *Vishamashan*, *Krodha* etc., due to their lifestyle. This type of lifestyle leads to *Agnidusti* and which becomes cause of various diseases. 80 volunteers of age group 20-40 years were selected for the study. They underwent for clinical study on the basis of number of *Lakshanas* present. These were taken as subjective parameter and which were *Samanya* and *Vishesh Lakshanas*. Those were *Arochaka*, *Vidagdha Udgara*, *Vishtambha*, *Aadhmana*, *Anga-Marda*, *Atijrumbha*, *Shirshula*, *Guru Gatrata*, *Utklesh*. *Jarana Kala* and *Abhyavaharan Shakti* were objective parameters, as these two are important to assess *Agni* of a person. For *Jarana Kala* gradation was done on the basis of hours of time taken to show *Laghuta* and *Kshuda Bodha*, because these are *Jeerna Aahara Lakshanas*. For *Abhyavaran Shakti* gradation was done on the basis of quantity of food. To assess *Agnivardhana*, specific diet chart was prepared by considering their daily requirement of calorie. Volunteers were advised to do three *Avartana* of *Makarasana* in the morning; Significant changes were seen in *Abhyavaharana Shakti* in both groups. 56.7% relief in group A and 72% relief were seen. There were significant changes seen in *Jarana Kala* in both groups. 54.9% relief in Group A and 74% relief in Group B.

Key words: *Makarasana*, *Kutki Churna*, *Agnivardhana*.

INTRODUCTION

In today's competitive life it is very difficult to keep away oneself from stress, tension, improper food habits. In short, What we call as - "Hurry-Worry-Curry". Generally in young age one doesn't experience any major health problems and keeps on doing

Mithya Aahara and *Vihara* which leads to *Agnimandya*.

It means that, person is said to be 'Swastha' whose *Doshas*, *Agnis*, *Dhatus* and *Malas* are in the state of equilibrium along with mental, sensory and spiritual pleasantness and happiness.

When a person keeps on doing *Mithya Aahar* and *Vihar* it will leads to *Agnimandya* which becomes cause of various diseases.

REVIEW OF LITERATURE

According to Vagbhata all diseases are mainly occur due to disarrangement of *Agni*^[1] and also according to *Charaka*, disarrangement of *Agni* leads to different diseases.^[2] Hence it is important to maintain equilibrium state of *Agni* for healthy life that is *Swastha*.

Maharshi Gheranda in his *Gheranda Samhita* recommended seven chapters for maintaining healthy body and happiness of mind.

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Here *Gheranda Samhitakar* describes *Makarasana* as *Agnivardhak*.^[3] Hence study taken to evaluate the efficacy of *Makarasana* as an *Agnivardhan Karma*.

OBJECTIVES

To study the efficacy of *Makarasana* as an *Agnivardhan Karma*.

MATERIALS AND METHODS

Total 104 volunteers were selected for study; out of which 80 volunteers completed the treatment on OPD basis. The volunteers were randomly selected irrespective of Age, Economical status, Sex. Out of 80 volunteers, 40 volunteers were subjected to *Makarasana* and 40 volunteers given *Kutaki Churna* for the treatment of *Agnivardhana*.

Methodology

Two groups of volunteers were considered for study

- **Group A :** Volunteers treated with *Makarasana* = 40 volunteers
- **Group B :** Volunteers treated with *Kutaki Churna* = 40 volunteers

OBSERVATIONAL STUDY

Sample sizes of 80 volunteers were selected irrespective of region and sex. Daily dietary charts were prepared. Special Questionnaire was prepared in order to ask people about the *Lakshanas*. Volunteers were asked to maintain a notebook to mention *Lakshanas*. Volunteers were advised to don't addiction (*Vyasana*) during study period. Written informed Consent was taken prior to study.

Selection of Volunteers

Inclusion Criteria

1. Volunteers of both sexes were selected irrespective of religion and caste.
2. Age group of 20-40 years.

Exclusion Criteria

1. Any individuals suffering from severe systemic illness.

2. Any individuals suffering from irritable bowel syndrome.
3. Any individuals having spine anomalies or disease.
4. Any pregnant women and lactating mother.

Place of work

The study was carried out at *Swastharakshan* OPD in our hospital.

Procedure

For Group A: *Makarasana* (Trial Group)

Position - Lie down in a prone position with the hands above the head keeping straight alongside the head resting the palms on the ground, touching the chin on the floor, and legs together soles facing up, keep the body from toes to head in a straight line.

Step 1 - Spread the legs apart; heels facing each other, toes facing outwards.

Step 2 - Fold the right hand and place the right palm on the left shoulder. Then similarly keep the left palm on the right shoulder. Keep the chin on the point where the two arms cross (Rest and relax in this posture)

Step 3 - Remove the left palm and unfold the left hand, similarly the right palm and hand and come back to step no 1.

Step 4 - Bring the legs together that is come back to the position.

This procedure were repeated for again two times.

Volunteers were advised to do three *Avartana* of *Makarasana* in the morning, each *Avartana* takes 5 min, for 28 days.

For Group B: (Control Group)

Kutaki Churna 500 mg were given twice a day, after meal with *Anupana Koshna Jala*.

Duration of the study

Total duration of study was for 28 days for each group.

CRITERIA OF ASSESSMENT**Subjective Parameters**

1. Arochaka
2. Vidagdha Udgar
3. Atijrumbha
4. Guru Gastrata
5. Aadhman
6. Vishtambha
7. Shir Shula
8. Angamarda
9. Utklesh

Objective Parameters

1. Time taken to digest the food (*Jarana Kala*)
2. Quantity of food (*Abhyavaharana Shakti*)

Follow up

- 1st follow up - 7th day.
 2nd follow up - 14th day.
 3rd follow up - 21st day.
 4th follow up - 28th day.

Grading for subjective parameters

SN	Criteria for subjective parameters	Grade
1	No <i>Lakshana</i> present	0
2	At least 3 <i>Lakshanas</i> present	1
3	At least 6 <i>Lakshanas</i> present	2
4	All <i>Lakshanas</i> are present	3

Abhyavaran Shakti (quantity of food)

These criteria will be assessed on consumption of quantity of food.

- Grade 0 - more than quantity fixed
- Grade 1 - as per quantity fixed
- Grade 2 - less than quantity fixed

Jarana Kala (time taken to digest the food)

- Grade 0 - 4 hours
- Grade 1 - more than 4 hours to 6 hours
- Grade 2 - more than 6 hours to 8 hours
- Grade 3 - more than 8 hours

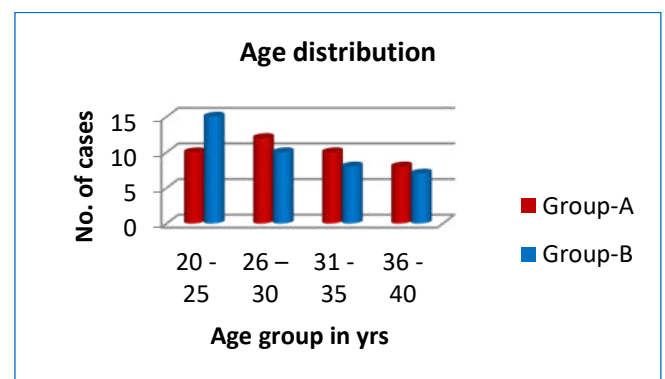
OBSERVATIONS AND RESULTS

Observations were made on the basis of data collected by clinical assessment and it was presented in the form of tables and graphs.

1. Total no. of Volunteers included in the study - 104
2. No. of volunteers who completed study - 80

Table 1: Age wise distribution of 80 volunteers.

Age in yrs	Group - A	Group - B	Total	%
20 - 25	10	15	25	31.2
26 - 30	12	10	22	27.5
31 - 35	10	8	18	22.5
36 - 40	8	7	15	18.8
Total	40	40	80	100

Graph 1: Group wise distribution of 80 volunteers according to Age.**Table 2: Sex wise Distribution of 80 volunteers.**

Gender	Group - A	Group - B	Total	%
Female	24	18	42	52.5

Male	16	22	38	47.5
Total	40	40	80	100

Table 3: Distribution of 80 volunteers according to Diet.

Diet	Group - A	Group - B	Total	%
Mix	33	29	62	77.5
Veg	7	11	18	22.5
Total	40	40	80	100

Table 4: Distribution of 80 volunteers according to Koshtha.

Koshtha	Group - A	Group - B	Total	%
Krura	17	20	37	46.3
Madhyam	18	16	34	42.4
Mrudu	5	4	9	11.3
Total	40	40	80	100

Table 5: Distribution of 80 volunteers according to Agni.

Agni	Group - A	Group - B	Total	%
Mandagni	6	8	14	17.5
Madhyagni	10	12	22	27.5
Vishamagni	24	20	44	55.0
Total	40	40	80	100

Table 6: Distribution of 80 volunteers according to Vishamashana.

Vishamashana	Group - A	Group - B	Total	%
Never	9	7	16	20.0
Sometimes	20	23	43	53.7

Always	11	10	21	26.3
Total	40	40	80	100

Table 7: Distribution of 80 volunteers according to Exercises.

Exercises	Group-A	Group-B	Total	%
Never	14	11	25	31.3
Sometimes	26	29	55	68.7
Always	0	0	0	0
Total	40	40	80	100

Table 8: Effect on subjective parameter in both groups.

Subjective Parameter	BT	AT
Group - A	2.5	1
Group - B	2.63	0.57

Table 9: Effect on Jarana Kala in both groups.

Jarana Kala	BT	AT
Group-A	2.33	1.05
Group-B	2.42	0.63

Table 10: Effect on Abhyavaharan Shakti in both groups.

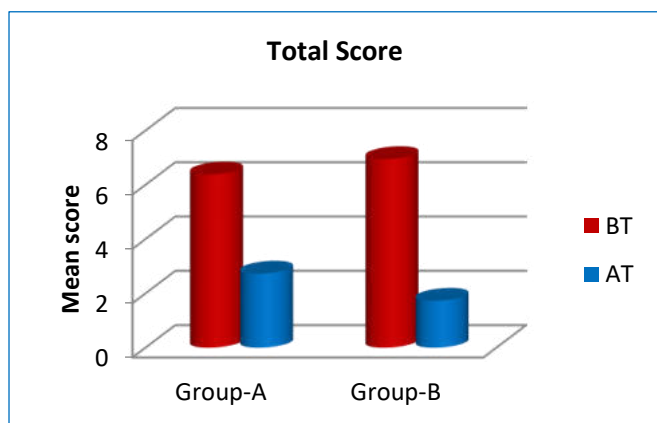
Abhyavaharan Shakti	BT	AT
Group - A	2.15	0.93
Group - B	2.5	0.7

Table 11: Total effect on subjective and objective parameter in both groups.

Total score	BT	AT
Group - A	6.98	2.98

Group - B	7.55	1.9
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Graph 2: Total Effect on subjective and objective parameter in both groups.



STATISTICAL ANALYSIS

Table 12: Effect on subjective parameter in both groups.

Subjective Parameter	BT		AT		% Relief	Z	P
	\bar{X}	Sd	\bar{X}	Sd			
Group - A	2.50	0.599	1.0	0.816	60.0	5.339	<0.001 HS
Group - B	2.63	0.586	0.57	0.675	78.3	5.545	<0.001 HS

Effect of *Makarasana* in Group A showed significant with respect to *Agnivardhana* (AT-28 days) with an improvement of 60.0% ($p < 0.001$), whereas the *Kutaki* in Group B proved significant with 78.3% ($p < 0.001$). i.e. both are significant but percentage of relief is more in Group B.

Table 13: Comparison on subjective parameter in both groups.

Subjective Parameter	Mean difference score	Sd	Z	P
Group - A	1.50	0.88	2.867	0.004 Sig

Group - B	2.05	0.78		
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When we compare between groups, Group A and Group B, it shows significant i.e. $z = 2.867$ and $P = 0.004$, but the mean difference score is more in Group B.

Table 14: Statistical analysis of improvement in Jarana Kala.

Jarana Kala	BT		AT		% Relief	Z	P
	\bar{X}	Sd	\bar{X}	Sd			
Group - A	2.33	.526	1.05	.783	54.9	5.232	<0.001 HS
Group - B	2.42	.594	.63	.705	74.0	5.376	<0.001 HS

Effect of *Makarasana* in Group A showed significant with respect to *Agnivardhana* (AT-28 days) with an improvement of 54.9% ($p < 0.001$), where as the *Kutaki* in Group B proved significant with 74.0% ($p < 0.001$).

Jarana Kala	Mean difference score	Sd	Z	P
Group - A	1.28	0.78	2.531	0.011 Sig
Group - B	1.80	0.94		

When we compare between Group A and Group B, it shows highly significant, $z = 2.531$ and $P = 0.011$, but the mean difference score is more in group B.

Table 15: Statistical analysis of Abhyavaharana Shakti.

Abhyavaharana Shakti	BT		AT		% Relief	Z	P
	\bar{X}	Sd	\bar{X}	Sd			
Group - A	2.15	.662	.93	.829	56.7	5.258	<0.001 HS
Group - B	2.50	.555	.70	.758	72.0	5.305	<0.001 HS

Effect of Makarasana in Group A showed significant with respect to Agnivardhana (AT-28 days) with an improvement of 56.7% (p<0.01), whereas the Kutaki in Group B proved significant with 72.0% (p<0.001).

Abhyavaharana Shakti	\bar{X}	Sd	Z	P
Group - A	1.23	0.77	2.627	0.009 Sig
Group - B	1.80	1.02		

When we compare between Group A and Group B, it shows highly significant i.e. z=2.627 and P=0.009, but the mean score is more in Group B.

Table 16: Total score of subjective and objective parameters.

Total Score	BT		AT		% Relief	Z	P
	\bar{X}	Sd	\bar{X}	Sd			
Group - A	6.98	1.025	2.98	1.561	57.3	5.543	<0.001 HS
Group - B	7.55	1.218	1.90	1.482	74.8	5.536	<0.001 HS

Total Score	Mean difference score	Sd	Z	P
Group - A	4.00	1.57	4.093	<0.001 HS
Group - B	5.65	1.85		

Table 17: Percentage of relief in both group.

Symptoms	% Relief	
	Group - A	Group - B
Subjective Parameter	60.0	78.3
Jarana Kala	54.9	74.0
Abhyavaharana Shakti	56.1	72.1

Total Score	57.2	75.1
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Graph 17: Percentage of relief in both group.

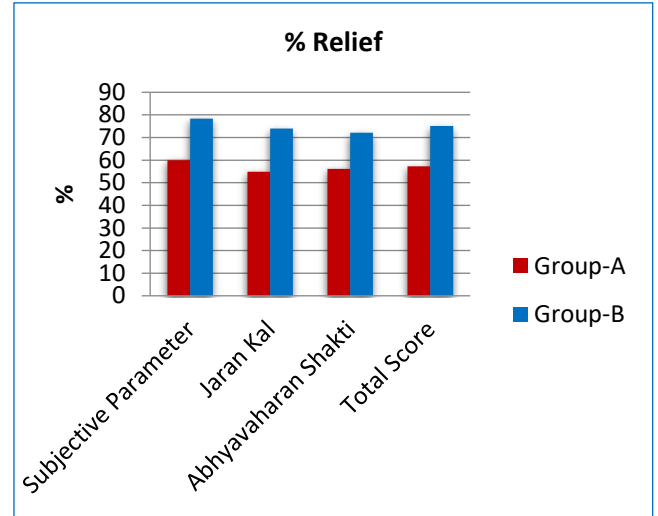
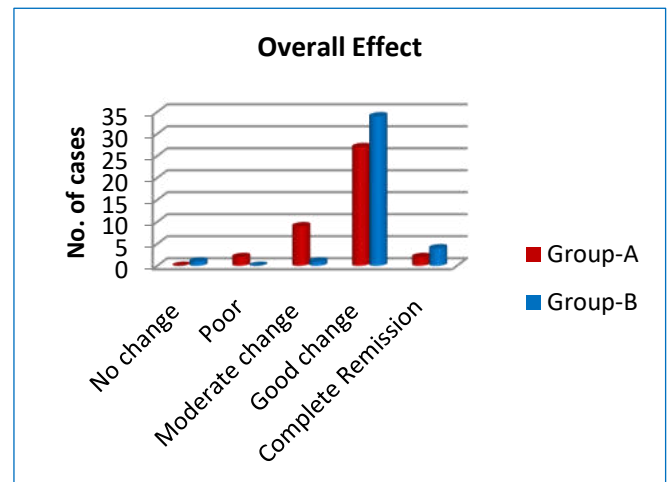


Table 18: Overall effect in both group.

Overall Effect	No. of Cases	
	Group - A	Group - B
No change	0	1
Poor (<25%)	2	0
Moderate change (25% - 49.9%)	9	1
Good change (50% - 99%)	27	34
Complete Remission (100%)	2	4

Graph 18: Overall effect in both group.



DISCUSSION

The present clinical study was planned in two groups of 40 volunteers each, aimed to study *agnivardhan* with *Makarasana* in Group A and *Kutaki Churna* in Group B and follow up for after every 7 days during study. The discussion on incidences, etc. observed during study is as follows:

Discussion on observation

Gender

In this study a different number of volunteers were recorded. The present study does not provide any significant data may be due to small sample size.

Out of 80 volunteers of 42 (52.5%) volunteers were female and 38 (47.5%) were males. It means that the number of female volunteers increasing nowadays. It is Because of more burdens of household works.

There were 18 (22.5%) Vegetarian and 62 (77.5%) were mixed diet volunteers. It may say that *Agnivardhan Karma* required more in who takes mixed diet can get *Agnidusti* easily.

In this study, out of 80 volunteers, 37 belongs to *Krura Kostha*, 34 volunteers were *Madhyama Kostha* and 9 volunteers belong to *Mridu Kostha*. *Mandagni* -14, *Madhyam* - 22 and *Vishamagni* - 44 volunteers. 2.5% Volunteers never does *Vishamashana*, 72.5% volunteers were doing *Vishamashana* sometimes and 25% Volunteers were doing *Vishamashana* always.

31.3% Volunteers were never doing exercises, 55% Volunteers were doing sometimes and none of them were doing always.

In the present study *Makarasana* has been selected as per its classical references for the *Agnivardhan Karma*. As per *Bhavaprakasha*, *Kaiyadeva* and *Priya Nighantu*, *Kutaki* has property of *Agnivardhana*, so in this study *Kutaki Churna* used in Group B as control drug. The drug had collected from GMP certified company.

The effect of *Makarasana* and *Kutaki Churna* on subjective parameter were observed and analyzed statistically.

Symptom wise of subjective parameters were taken from ancient texts of Ayurveda. The commonly found symptoms selected for the study. Some special and common symptoms of *agnidusti* were selected for the study.

Abhyavaharan Shakti was assessed on the basis of consumption of quantity of food. Since *Makarasana* and *Kutaki Churna* increases the '*Agnivardhana*' effect. It is nothing but the consumption of the quantity of the food.

Since *Makarasana* as the *Agnivardhan* effect, *Abhyavaharan Shakti* was assessed.

Jaran Kala was based on the time taken for digestion of the food. Grade 0 was taken as four hours as it is considered to be normal time required for digestion. It is based on the '*Laghuta*' and '*Kshuda*' as it is easily noticed in volunteers.

CONCLUSION

On the basis of above study it can be concluded that both *Makarasana* and *Kutaki Churna* has statistically significant effects on *Agnivardhana*. In this study *Kutaki Churna* has more positive effect on the *Agnivardhana Karma* comparative to *Makarasana* in volunteers. *Makarasana* put the pressure on abdomen, lower back and at the same time enables mind to concentrate on breathing. All these together have positive effect on digestive strength. It has been said that it awakes '*Kundalini Chakra*', so this has positive effect on mind. During the study no any adverse effects were noted. By practicing it daily in the morning, it enforces habit of exercise. And by doing for 5 min daily improves health and may become good option for them.

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