



COMPARATIVE CLINICAL STUDY TO EVALUATE THE EFFICACY OF GEETAM AND CHANDRANULOMAVILOMA PRANAYAMA IN KRODHA

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ABSTRACT

Krodha is a *Manasika Vikara* which can be assessed by *Droha* done by another person. Here is an attempt made to evaluate the efficacy of *Geetam* and *Chandra Anuloma Viloma Pranayama* in the management of *Krodha*. Forty subjects fulfilling the diagnostic and inclusion criteria were selected and randomly assigned into two groups. Group A was treated with *Geetam*, and Group B were treated with *Chandra Anuloma Viloma Pranayama*. The effect of treatment was assessed based on symptoms of *Krodha*, Intermittent explosive disorder and Buss and Perry Scale. Both *Geetam* and *Chandra Anuloma Viloma Pranayama* showed a statistically significant effect on the assessment criteria. On comparison between two groups, there is no statistically significant difference between Group A and Group B. Thus, the null hypothesis is rejected, and the alternative hypothesis (H1) is accepted i.e., There is an equivalent effect of both *Geetam* and *Chandra Anuloma Viloma pranayama* in the management of the *Krodha*.

Keywords: *Geetam*; *Chandra Anuloma Viloma*, *Pranayama*; *Krodha*; Aggression; Intermittent explosive disorder.

INTRODUCTION

India has the largest adolescent population in the world, 253 million, and every fifth person is between 10 and 19 years.¹ This is the most crucial period as it is the transitional stage between childhood and adulthood. Many Physical, Physiological behavioural changes occur during this period. Generally, aggressive behaviours progress from less to more severe throughout adolescent development.² Aggression is overt behaviour that involves a threat or action that potentially or causes pain, withdrawal, or loss of resources.³ Adolescent aggression is an important focus for educators and parents owing to its relative stability over time and consistent link to a variety of negative outcomes later in adolescence, including delinquency, substance use, conduct problems, poor adjustment, and academic difficulties. *Krodha* is a *Manasikavikara*⁴ which can be assessed by *Droha* done by another person according to *Dalhana*⁵. As per *Bhagavat Gita*, *Krodha* leads to *Buddhi Nasha* and thereby destruction.⁶ *Krodha* is a *Pittaja Vikara*.⁷ So *Pittasya upakrama* can be adopted in *Krodha*. In *Ashtanga Hrudaya*, *Acharya* mentioned 'Geetam' as one of the *Pittasya Upakrama*.⁸ "Geetam Ganam" as per *Arunadatta*.⁹ Each *Raga* has a specific action on a specific *Dosha*. So, in this study, "Raga Purvi" is used as it pacifies *Pitta Dosha*.¹⁰ *Geeta* by *Pitta Shamana* property pacifies *Pitta* there by *Krodha*. *Pranayama* is one of the eight limbs of *Ashtanga Yoga*. The word *Pranayama* means 'extension or expansion of the dimension of *Prana*'. The *Shivaswarodaya*, an ancient treatise advises quieter, passive activities (*Soumya Karya*) when the left nostril (*Ida/Chandra Swara*) is dominant and engage in challenging and exertional activities (*raudra karya*) when the right nostril (*Pingala/Surya Swara*) is dominant and to relax or meditate when flow through both nostrils is equal (*Sushumna Swara*).¹¹ In this study *Chandra Anuloma Viloma Pranayama* is selected because *Krodha* is a *Pittaja vikara*. By the virtue of cooling down or parasympathetic effect in the body, it pacifies *Pitta* and in turn, helps to control *Krodha*. Here, an attempt is made to compare the

efficacy of *Geetam* and *Chandra Anuloma Viloma Pranayama* in *Krodha*.

AIM AND OBJECTIVES

- To evaluate the effect of *Geetam* in the management of *Krodha*.
- To evaluate the effect of *Chandra Anuloma Viloma Pranayama* in the management of *Krodha*.
- To compare the effect of *Geetam* and *Chandra Anuloma Viloma Pranayama* in the management of *Krodha*

MATERIALS AND METHODS

Study Design: - An open randomized comparative clinical study of two groups consisting of twenty subjects in each group.

Sample Size – A separate case proforma was prepared and screening was done by giving questionnaires. Forty subjects fulfilling the diagnostic and inclusion criteria with history taking, physical signs and symptoms were selected. The assessment parameters obtained was scored and statistically analysed.

INCLUSION CRITERIA

- Subjects of adolescent age (10-19yrs), irrespective of gender, caste, and creed.
- Subjects presenting with general features of Intermittent explosive disorder.

EXCLUSION CRITERIA

- Subjects suffering from other Psychiatric Diseases.
- Subjects suffering from other organic diseases.

ASSESSMENT CRITERIA

Diagnosis and improvement in signs and symptoms of the condition was made according to symptoms of Intermittent Explosive Disorder and Buss and Perry Scale

- 1) Buss and Perry Scale
- 2) Symptoms of IED
 - Physical aggression
 - Verbal Aggression
 - Aggressive behaviour is grossly disproportionate to the magnitude of the psychosocial stressors
 - The recurrent aggressive outbursts cause either marked distress in the individual or impairment in occupational or interpersonal functioning.

DIAGNOSTIC CRITERIA

A. Recurrent outbursts that demonstrate an inability to control impulses, including either of the following: – Verbal aggression (tantrums, verbal arguments, or fights) or physical aggression that occurs twice in a week-long period for at least three months and does not lead to the destruction of property or physical injury (Criterion A1) – Three outbursts that involve injury or destruction within a year-long period (Criterion A2)

B. Aggressive behaviour is grossly disproportionate to the magnitude of the psychosocial stressors (Criterion B).

C. The outbursts are not premeditated and serve no premeditated purpose (Criterion C).

D. The individual must be at least six years old (Criterion D)

E. The recurrent outbursts cannot be explained by

another mental disorder and are not the result of another medical disorder or substance use (Criterion E).

- Two separate criteria for types of aggressive outbursts (A1 and A2) which have empirical support – Criterion A1: Episodes of verbal and/or non-damaging, nondestructive, or non-injurious physical assault that occur, on average, twice weekly for three months. These could include temper tantrums, tirades, verbal arguments/fights, or assault without damage. This criterion includes high frequency/low-intensity outbursts.

- Criterion A2: More severe destructive/assaultive episodes which are more infrequent and occur, on average, three times within twelve months. These could be destroying an object without regard to value, assaulting an animal or individual. This criterion includes high-intensity/low-frequency outbursts.

PLAN FOR STUDY

The cases were selected as per signs and symptoms of the intermittent explosive disorder.

Table 1

Intervention:	Timings	Duration
<i>Geetam (Raga purvi)</i>	20 minutes	15 days
<i>Chandra anuloma viloma pranayama</i>	20 minutes (10 minutes in the morning and 10 minutes in the afternoon)	15 days

Total Study Duration -30 days.

Patients will be observed before the treatment and the 15th day after the treatment. Follow up will be done on the 30th day.

STATISTICS

Statistical analysis was done using SPSS VER.20. Cochran's test and Paired t-test were applied to analyse the significance of the change in subjective parameters. Mc-Nemer test was applied for post hoc which showed significance in Cochran's test, to interpret the time of significant change. Man-witney U test and unpaired t-test were applied for analyzing the significance between Group A and Group B.

OBSERVATIONS

Out of 40 patients taken for observation, 22.5 % of subjects belonged to the age group of 15. In group A,

the dominant age was 12. While in group B, a maximum of 35% belong to 15 years. Among 40 subject's majority of the subjects i.e., 32(80%) belonged to an upper middle class, 8 (20%) were from the lower middle class. 38(95%), 1(2.5%) and 1 (2.5) of subjects belonging to Hindu, Muslim and Cristian religions respectively participated in this study. 65 % of the subject in group A and 50% of the subjects in group B belong to *Vatapitta Prakriti*. whereas 45% and 15% of subjects in group A and B respectively belongs to *Pitta kapha Prakriti*. Overall 57.5% of the total subject (40) were of *Vatapitta Prakriti*. Out of 40 subjects, 65% were of *Avara satwa* and 35% were of *Madhyama satwa*. Out of forty patients, 25% had experienced emotional trauma, 5% of them had a history of exposure to explosive behaviours at home.

RESULTS

Table 2: Cochran Test

Group A						
		Mean	Std. Deviation	Frequency	Cochran's Q value	Significance
VERBAL AGGRESSION	BT	1.00	.000	20	26.375	<0.001
	AT	.25	.444	5		
	FU	.30	.470	6		
PHYSICAL AGGRESSION	BT	.75	.444	15	26.143	<0.001
	AT	.05	.224	1		
	FU	.10	.308	2		
DISPROPORTIONATE TO MAGNITUDE	BT	1.00	.000	20	32.000	<0.001
	AT	.20	.410	4		
	FU	.20	.410	4		
DISTRESS	BT	1.00	.000	20	34.300	<0.001
	AT	.10	.308	2		
	FU	.05	.224	1		

Table 3: Cochran Test

Group B						
		Mean	Std. Deviation	Frequency	Cochran's Q value	Significance
VERBAL AGGRESSION	BT	1.00	.000	20	24.000	<0.001
	AT	.25	.444	8		
	FU	.30	.470	8		
PHYSICAL AGGRESSION	BT	.85	.366	17	30.00	<0.001
	AT	.10	.308	2		
	FU	.10	.308	2		
DISPROPORTIONATE TO MAGNITUDE	BT	1.00	.000	20	34.111	<0.001
	AT	.10	.308	2		
	FU	.15	.366	3		
DISTRESS	BT	1.00	.000	20	34.000	<0.001
	AT	.15	.366	3		
	FU	.15	.366	3		

Table 4: Mc Nemar Test

SYMPTOMS		BT & AT		BT & FU		AT & FU	
		A	B	A	B	A	B
VERBAL AGGRESSION	P-value	.000	.000	.000	.000	1.000	1.000
PHYSICAL AGGRESSION	P value	.000	.000	.000	.000	1.000	1.000
DISPROPOTIONATE TO MAGNITUDE	P value	.000	.000	.000	.000	1.000	1.000
DISTRESS	P value	.000	.000	.000	.000	1.000	1.000

Table 5: Effect of *Geetam Chandra* and *Anuloma Viloma Paranayama* on Buss and Perry Scale

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T	df	Sig. (2-tailed)
				Lower	Upper			
BT-AT	51.200	19.975	4.467	41.851	60.549	11.463	19	.000
BT-FU	50.250	17.502	3.913	42.059	58.441	12.840	19	.000
AT-AF	-.950	18.426	4.120	-9.574	7.674	-.231	19	.820
Group B								
BT-AT	59.000	19.496	4.360	49.875	68.125	13.534	19	.000
BT-FU	61.450	19.176	4.288	52.475	70.425	14.331	19	.000
AT-AF	2.450	9.583	2.143	-2.035	6.935	1.143	19	.267

Table 6: Effect of Treatment between the Groups

Symptom	Mann-Whitney U	Wilcoxon W	Z	P-value
Verbal Aggression	170.000	380.000	-1.000	>0.05
Physical Aggression	190.000	400.000	-.350	>0.05
Disproportionate to the magnitude of illness	180.000	390.000	-.874	>0.05
Distress	190.000	400.000	-.472	>0.05

Table 7: Independent Samples Test-Buss and Perry Scale

F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
002	.965	1.250	38	.219	-7.800	6.241	-20.435	4.835

DISCUSSION

In the present study effect of *Geetam* and *Chandra anuloma viloma pranayama* on Verbal aggression was statistically significant but the variation seen in these two groups were statistically insignificant. In Group A-75% were improved after treatment. In Group B, 60% were improved after the treatment.

The effect of *Geetam* and *Chandra anuloma viloma pranayama* on Physical aggression was statistically significant but the variation seen in these two groups were statistically insignificant. In Group A-88.23% were improved after treatment. In Group B, 93.33% were improved after the treatment

The effect of *Geetam* and *Chandra anuloma viloma pranayama* on “Aggressive behaviour which is disproportional to the magnitude of psychosocial stressors” was statistically significant whereas variations seen in these two groups were statistically insignificant. In Group A-90% were improved after

treatment. In Group B, 80% were improved after the treatment

The effect of *Geetam* and *Chandra anuloma viloma pranayama* on “Outburst causes distress or impairment in functioning” was statistically significant but variations seen in these two groups were statistically insignificant. In Group A-90% were improved after treatment. In Group B, 85% were improved after the treatment

In a Group Music Intervention Reduces Aggression and Improves Self-esteem in Children with Highly Aggressive Behaviour: A Pilot Controlled Trial, it is found that music can reduce aggressive behaviour and improve self-esteem in children with highly aggressive behaviour.¹² So, in this study, “*Raga Purvi*” is used as it pacifies *Pitta Dosha*. *Geeta* by virtue of *Pitta Shamana* property pacifies *Pitta*, thereby *Krodha*. Possible mechanisms include relaxation effects¹³, which may modulate the endocrinal responses and stabilize autonomic nervous systems.¹⁴

Geetam intervention also has effects on the brain function resulting in neural network activation, and ultimately leads to activation of different regions of the brain if performed regularly.¹⁵ These effects also produce better physical and psychological function and therefore have beneficial effects on stress responses; reducing anxiety, improving mood and lessening pain perception.¹⁶

A study on the relationship between verbal aggressiveness and state anxiety in sports by Alexandra et al.¹⁷ showed that male basketball players were more affected by the verbal aggressiveness of their coaches compared to female basketball players as assessed by VAS administered immediately after the game. In their study, they also observed a positive correlation between their anxiety and VAS scores in male players. It is known that yoga with its holistic approach uses several techniques to calm down the mind and reduce the anxiety state. Earlier studies have shown that in community homegirls and congenitally blind children, sympathetic tone reduced after yoga practices which resulted in significant decreases in resting heart rates and breath rates, thus reducing fear and anxiety.¹⁸ The sympathetic tone reduction could be a valuable treatment modality for the reduction of anxiety. Another study on PT teachers also showed that yoga reduced their sympathetic activity after three months of yoga practice.¹⁹ In a randomized, prospective, single-blind, comparative study has shown the efficacy of Yoga in decreasing verbal aggressiveness. Recent studies have revealed that breathing through a particular nostril can alter metabolism and autonomic activities. In their one-month-long study, they found that the left nostril Pranayama group also showed an increase of 24% in baseline oxygen consumption. They attributed this increase in metabolism to increased sympathetic discharge. The 'left nostril Pranayama' group showed an increase in volar galvanic skin resistance, interpreted as a reduction in sympathetic nervous system activity supplying the sweat glands. These results suggest that breathing selectively through either nostril could have a marked activating effect or a relaxing effect on the sympathetic nervous system.²¹

Based on these observations, we may suggest that the reduction in aggressiveness in the present study could be due to the reduction in their baseline anxiety and sympathetic reactivity.

The practitioners of Pranayama try to keep their attention on the act of breathing, leading to concentration. This removes his attention from worldly worries and "de-stress" them. This may decrease the release of adrenaline i.e., decrease sympathetic activity and thereby controlling anger. Yogic practices shift the autonomic nervous system balance from primarily sympathetic to parasympathetic, by directly enhancing parasympathetic output, through vagal stimulation, resulting in positive changes in cardiovagal function and associated neuroendocrine, hemodynamic, and inflammatory profiles, in sleep and affect, and in related downstream metabolic parameters.

CONCLUSION

Krodha is a *Manasa Vikara* and is considered as *Sarvadosha Prakopaka Hetu* by *Ashtanga Samgraha*. This study was intended to compare the efficacy of *Geetam* and *Chandra Anuloma Viloma Pranayama* in *Krodha*. As per the observations, Male subjects were dominant in this study. An evident number of subjects had experienced emotional trauma and had a history of exposure to explosive behaviours at home. As per the result, both *Geetam* and *Chandra Anuloma Viloma Pranayama* showed statistically significant results on all the assessment criteria i.e., Buss and Perry scale, Verbal aggression, Physical aggression, Aggressive behaviour is grossly disproportionate to the magnitude of the psychosocial stressors and the outburst that cause distress or impairment of functioning or lead to financial or legal consequences. There is no statistically significant difference observed in the comparison between the 2 groups. Thus, it was concluded that: The null hypothesis is rejected, and the alternative hypothesis (H1) is accepted i.e. There is an equivalent effect of both *Geetam* and *Chandra Anuloma Viloma Pranayama* in the management of the *Krodha*.

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