

Effect of Complete Mind – Body Therapy on Asthma Quality of Life in Asthma Patient Attending OPD of SMS Hospital Jaipur

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DOI: [10.36347/sjams.2019.v07i07.051](https://doi.org/10.36347/sjams.2019.v07i07.051)

| Received: 20.07.2019 | Accepted: 27.07.2019 | Published: 30.07.2019

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Abstract

Original Research Article

Background: Asthma has become a substantial burden to people causing a reduced quality of life due to physical, psychological and social effects. Yoga is considered as the best complementary medicine by the national institute of health. The aim of our study to see the effect of yoga on quality of life in asthma patients in and around Jaipur city.

Materials and methods: A randomized controlled study was conducted on 108 stable diagnosed asthma patients divided in study and control group (54 in each group of 18 to 40 year of age) of either sex. The study group completed 8 weeks of yoga training under trained yoga instructor without stopping their medication. Every patient completed asthma quality of life questionnaire (AQLQ) HINDI version on day 1 and at 8 week of the day. Mean score of (AQLQ) and its four domains (Activity limitation, Symptom, Emotional function, Environmental stimuli) were taken. BMI was also taken on day 1 and 8 week of the day. Data analysis was done using paired and unpaired 't'– test.

Results: There was statistically significant decrement ($P < 0.001$) in BMI and statistically significant improvement ($P < 0.001$) in mean score of (AQLQ) and its domains (Activity limitation, Symptom domain, Emotional function, Environmental stimuli) after 8 weeks of yoga practice as compared to baseline. Symptom domain improved significantly ($P < 0.001$) in control group also after 8 weeks as compared to baseline. The inter group comparison showed statistically significant decrease ($P < 0.001$) in BMI and statistically significant improvement ($P < 0.001$) in Mean score of (AQLQ) and its domains at 8 weeks. **Conclusion:** The present study demonstrates that complete mind body approach with regular asana, pranayama, cleansing technique and meditation showed significant improvement in BMI and quality of life in bronchial asthma patient. Hence act as additive effect with medication.

Keywords: Yoga, Asthma, AQLQ, BMI.

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INTRODUCTION

From the last few decades the concept of “good health” has moved from “absence of disease or illness” to a more positive concept which embraces the subjective experience of wellbeing and quality of life [1].

Bronchial asthma is a common chronic non-communicable disease. Asthma is a serious burden in low- and middle-income countries [2].

Globally, the economic cost that is associated with Asthma exceed those of tuberculosis and HIV/AIDS combined [3]. The economic cost of Asthma is considerable both in terms of direct medical costs

(such as hospital admissions and cost of pharmaceuticals) and indirect medical costs (such as time lost from work and premature death) [4].

According to GINA guideline 2014 asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation [5].

Bronchial asthma is a stress disease. It can be induced by various stressors [6]

- Physical stressors: Changes in temperature, humidity and atmospheric pressure, and especially influence of air conditioning and chills.
- Chemical stressors: Smoking, exhaust gas, alcohol and drugs.
- Biological stressors: Microbes (bacteria, viruses, etc.), pollen and foods.
- Psychological stressors: Anxiety, fear, anger, hatred, inferiority complex, guilt and psychological stimuli that cause these emotions.
- Social stressors: School entrance examinations, employment, reassignment, promotion, retirement, marriage, divorce, housing loan and legal problems.

The word 'Yoga' comes from the Sanskrit word 'Yuj' which means 'to join'. According to the Bhagavat Gita Yoga comprises an exercise for improving the 'skill' of the body and techniques that act on the mind and emotions, and provides a complete philosophy for living [7].

Yoga contain elements that address the problems at every level that is asanas that relax and tone the muscles and massage the internal organs, pranayama that slows breathing and regulates the flow of prana, relaxation and meditation that act to calm the mind and emotions culturing to heal the spirit [8].

The third and fourth basic principles that underlie the teachings and practices of yoga's healing system state that [9]

- Yoga is self-empowering; the student is his or her own healer. Yoga engages the student in the healing process by playing an active role in their journey toward health, the healing comes from within, instead of from an outside source and a greater sense of autonomy is achieved.
- The quality and state of an individual's mind is crucial to healing. When the individual has a positive mind-state then the healing happens more quickly, whereas if the mind-state is negative, healing may be prolonged.

Yoga has been considered the best complementary and alternative medicine by the National Institutes of Health [10-12]. The concept Quality of life can be derived from Aristotle's work (384-322 BC.). QoL covers all aspects of life including health status, environment, financial aspects and human rights [13, 14].

In any medical condition there are three basic reasons for treating patients [15]:

- To prevent them for dying
- To reduce the risk of long term organ damage.
- To improve the well-being (quality of life).

The asthma quality of life questionnaire (AQLQ) (provided kindly by Professor E. Juniper) measures the functional (physical, emotional, occupational and social) problems that are most troublesome to asthma patients [16, 17].

Quality of life was measured by using a self-administered Asthma Quality of Life Questionnaire (AQLQ) which is available in bilingual form, i.e. English and Hindi [16].

It has good measurement property. It is valid as good evaluative and discriminative property [18]. It has also been validated on Indian population [18].

Subjects responded to each question on a 7-point scale (1 being severe impairment; 7 being no impairment). The overall quality of life score is the mean score of all the 32 items. Thus the score may vary from 1-7. The 32 items are further grouped into four sub-domains [19].

Domains number of questions

1. Activity limitation (patient specific)	11 (6 generic, 5 patient specific)
2. Symptoms	12
3. Emotional function	5
4. Environmental stimuli	4

The score for each sub-domain was also calculated as the mean score for items pertaining to that sub-domain. Thus, the score for each sub-domain may also vary from 1-7. The AQLQ was found to be valid, reproducible, and responsive to change in time [19].

MATERIALS AND METHODS

A randomized controlled interventional study was conducted on 108 subjects of 18 to 40 years of age of either sex in upgraded department of physiology SMS medical college, Jaipur. A written informed consent was taken of the subjects with an established diagnosis of asthma by department of pulmonary medicine SMS hospital Jaipur (diagnosed as per GINA Guideline 2006). The total subjects taken in study randomly divided in study and control group (54 in each group) taking atleast one drug (inhaled β -agonist, anticholinergics, methylxanthenes and inhaled corticosteroids) and stable medication dosing for the past one month. The subjects who were smokers, chronic medical condition that require treatment with oral or systemic steroid in the past one month, medical condition that contraindicate exercise, with a concomitant lung disease or practiced yoga or any other similar discipline during 6 month preceding the study, pregnant female and unstable medical condition and if subject is not cooperative were excluded from study.

After screening and fulfillment of inclusion and exclusion criteria, detailed history physical

examination was done. The yoga training was given to the study group in department of physiology SMS medical college Jaipur in the morning between 8 AM and 9AM for 5 days a week 45 to 60 minutes depending upon the set of completion for entire 8 weeks duration. The program consisted of practical sessions on asanas (postures), pranayamas (breathing techniques), kriyas (cleansing techniques), meditation and shavasana (a relaxation technique). All postures were performed for 2-10 minutes adding 2 minutes per week. The control group was not given yoga practice. both groups were asked to continue their medication.

Each patient completed the Asthma Quality of Life Questionnaire (AQLQ) HINDI version on day 1 and at 8 week of the day. The AQLQ is a 32-item (each scored using scale from 1 to 7), self-administered, asthma-specific instrument that assesses quality of life. These Items are grouped into four domains:

Activity Limitation:- (11 domain) assesses the amount of limitation of individualized activities that are important to the patient and are affected by asthma

Symptoms:- (12 domain) assesses the frequency and degree of discomfort of shortness of breath, chest tightness, wheezing, chest heaviness, cough, difficulty breathing out, fighting for air, heavy breathing, difficulty getting a good night's sleep.

Emotional Function:- (5 domain) assesses the frequency of being afraid of not having medications,

concerned about medications, concerned about having asthma, frustrated).

Environmental stimuli:- (4 domain) assesses the frequency of exposure to and avoidance of irritants such as cigarette smoke, dust, and air pollution [20].

Subjects responded to each question on a 7-point scale (1 being maximum impairment; 7 being no impairment). The score for each sub-domain was also calculated as the mean score for items pertaining to that sub-domain. Thus, the score for each sub-domain may also vary from 1–7.

The paired and unpaired 't' test was used to see the result.

RESULT

Total 108 subjects were studied in present study with (N=54 in each group). The result showed highly significant ($p \leq 0.001$) improvement in mean AQLQ score and all its four domains (Activity Limitation, Symptoms, Emotional function, and Environmental stimuli) in study group after 8 week of intervention and all these variables were highly significantly improved as compared to control group. Although improvement was seen in control group in all these variables but none was significant excluding the symptom score showed significant improvement in control group (TABLE-1).

Table-1

Parameters	Group	Pre	Post	Mean change	P-Value*
Activity Limitation	Study	3.32 ± 0.48	5.59 ± 0.38	2.27 ± 0.43	<0.001 (HS)
	Control	3.59 ± 0.68 [#]	3.75 ± 0.88 ^{\$}	0.15 ± 0.78 [£]	<0.149 (NS)
Symptom	Study	3.35 ± 0.51	5.58 ± 0.45	2.2 ± 0.42	<0.001 (HS)
	Control	3.42 ± 0.57 [#]	4.11 ± 0.73 ^{\$}	0.46 ± 0.65 [£]	<0.001 (HS)
Emotional function	Study	3.45 ± 0.65	5.68 ± 0.46	2.23 ± 0.63	<0.001 (HS)
	Control	3.59 ± 0.59 [#]	3.68 ± 0.84 ^{\$}	0.05 ± 0.82 [£]	0.644 (NS)
Environment stimuli	Study	3.45 ± 0.64	5.6 ± 0.34	2.1 ± 0.58	<0.001 (HS)
	Control	3.67 ± 0.55 [#]	3.74 ± 0.86 ^{\$}	0.07 ± 0.86 [£]	<0.540 (NS)
Total AQLQ score	Study	3.42 ± 0.44	5.61 ± 0.34	2.2 ± 0.39	<0.001 (HS)
	Control	3.67 ± 0.53 [#]	3.83 ± 0.77 ^{\$}	0.15 ± 0.71 [£]	0.116 (NS)

shows P-value > 0.001 at beginning (Pre) between study group and control group. \$ shows P-value < 0.001 after 8 weeks (Post) between study group and control group. £ shows P-value < 0.001 of mean change between study group and control group. * shows P-value of intra-group comparison at beginning and after 8 weeks by paired 't' test. #, \$, and £ shows P-value by unpaired 't' test for inter-group comparison.

There was statistically significant ($P < 0.001$) decrement in BMI in study group after 8 week of intervention and the mean change was also highly significantly decreased as compared to control group. Although decrement was seen in control group in all these variables but none was significant.

Table-2

Group	At beginning	At 8 weeks	Mean change	P value*
Study	24.4 ± 3.2	23.9 ± 3.5	-0.36 ± 0.7	<0.001 (HS)
Control	24 ± 2.7	24.1 ± 2.7	0.06 ± 0.33	0.203 (NS)
P value [#]	0.531 (NS)	0.909 (NS)	<0.001 (HS)	

* Within group comparison (at beginning and at 8 weeks) by paired t test

[#] Between Group comparison (study and Control) by unpaired t test

DISCUSSION

In present study there was highly significant increase in total AQLQ score and all its four domains (Activity Limitation, Symptoms, Emotional function, and Environmental stimuli) in study group and the mean value of total AQLQ score and all its four domains (Activity Limitation, Symptoms, Emotional function, and Environmental stimuli) is significantly higher in study group as compare to control group. Significant improvement was also seen in symptom domain of control group also. But the mean value of Symptom domain is significantly higher in study group as compare to control group. This means yoga have an additive effect on asthma in patient who are already on medication.

AQLQ reflect areas of function that are important to adult patient with asthma, includes both physical and emotional function, reproducible when the clinical state is stable, responsive to changes that are important to patient even if the changes are small and valid that is actually measure quality of life in asthma [16].

Asthma is a complex and multifaceted condition, and dissociations have been described between health status and other asthma control parameters [21, 22], with asthma quality of life being shown to be an independent measure of control that does not correlate closely with other control measures [23, 24].

Pranayama may have psychophysiological benefits by increasing the patient's sense of control over stress and thus aids in reducing their autonomic arousal factors. Yoga stabilizes the autonomic equilibrium with a tendency towards parasympathetic dominance rather than stress-induced sympathetic dominance. Yoga therapy readjusts the autonomic imbalance, controls the rate of breathing and relaxes the voluntary inspiratory and expiratory muscles, which results in decreased sympathetic reactivity [25-27]. Yoga increases the respiratory efficiency, balances the activity of opposing muscle groups and slows dynamic and static movements [27, 28].

Yoga with its calming effect on the mind can reduce and release emotional stresses, hereby withdrawing the broncho-constrictor effect [29-32].

R Nagarathna *et al.* showed a highly significant difference between groups (yoga group and control group) in their drug treatment score and number of attacks per week. There was significant improvement was also seen in the yoga group and control group. Because of decrease in number of attack and decrease in doses of drug overall quality of life is improved [31].

Venkatesan Prem *et al.* showed significant improvement in total score and in symptoms and the activity subdomain in the pranayama group while the emotional and environment domains did not show significant difference compared to the control group but improvement was seen. According to him advise of nasal breathing over oral breathing as part of the breathing technique cause filtration of air for allergens and polluting dust, humidification and production of nitric oxide, which results in brochodilatation of airways. Thus nasal breathing could have played a role in reducing the symptoms of asthma and thereby improving the quality of life for the asthmatic patients [33].

According to Candy Sodhi *et al.* symptom, activities and environmental domain of quality of life (AQLQ) and total AQLQ scores increased significantly after yoga at 8 weeks, mean of yoga group score was significantly higher than mean of control group score. Control group showed improvement in activities and environmental domain of quality of life (QOL) scores but it was non-significant. Emotional domain QOL scores increased in both the groups at 8 weeks, with increase in yoga group being statistically significant which is concordant to our study. But there was no significant difference in mean of yoga group score as compared to control group in emotional domain [34].

Murthy *et al.* showed there was significant decrease in symptom score as made on degree of cough, sputum and breathlessness and drug doses after pranayama (rechaka, puraka and kumbhaka) in asthma patients [12].

P. K. Vedanthan *et al.* stated that on analysis of data subjects in the yoga group reported a significant degree of relaxation, positive attitude and better yoga exercise tolerance. There was also a tendency towards lesser usage of beta adrenergic inhalers [35].

From the statistical analysis of the result obtained in present study and their comparison with M. Thomas *et al.* [36], M Thomas *et al.* [21], Savita Singh *et al.* [3], Venkatesan Prem *et al.* [33], Candy Sodhi *et al.* [34], it may be concluded that yogasana help in improving total AQLQ score and all its four domains (Activity Limitation, Symptoms, Emotional function, and Environmental stimuli) in study group. The symptom score was also increase in control group but the mean symptom score was significantly higher in study group than control group. Hence, Yoga acts as additive effect in asthma control with medication.

BMI

At 8 week of follow up there is significant weight loss in study group while not in control group. The inter group comparison showed there is significant

mean change in BMI in study group as compare to control group.

Singh *et al.* similarly showed that there is significant decrease in weight in yoga study group while not in control group. The inter group comparison also showed there is significant mean change in BMI in study group as compare to control group [37].

CONCLUSION

Hence, Yoga training improves psychological well-being, patient's efficiency and decreases limitation of activity. It reduces medication use and can improve the quality of life of the patients with improvements in pulmonary function.

ACKNOWLEDGEMENT

Special thanks are given to Dr. E. F. JUNIPER, McMaster University of Canada for giving me the questionnaire that I used in this study.

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