Asian Journal of Pharmaceutical and Clinical Research

Innovare Academic Sciences
Knowledge to Innovation

Vol 18, Issue 6, 2025

Online - 2455-3891
Print - 0974-2441

Research Article

EFFECTIVENESS OF CONCH BLOWING PRACTICE IN IMPROVING THE PULMONARY FUNCTIONS IN REGULAR SMOKERS WITH MILD-TO-MODERATE CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Received: 02 April 2025, Revised and Accepted: 20 May 2025

ABSTRACT

Objectives: The present study was undertaken to observe the efficacy of 24 weeks of conch-blowing practice as an alternative therapy in improving the pulmonary functions of regular smokers with mild to moderate chronic obstructive pulmonary disease (COPD).

Methods: In this study, a total of 30 male regular smokers with mild to moderate COPD were recruited from the Department of Pulmonary Medicine, NRI Institute of Medical Sciences, Visakhapatnam, Andhra Pradesh, after obtaining voluntary, written informed consent. The participants were trained for a week on blowing a conch. The intervention duration was 6 weeks, with 2 sessions a day, morning and evening, for 5 days a week. Each session comprises blowing the conch 3 times with a duration of 10 s. Vital capacity, 40 mmHg test, breath holding time, inspiration, and expiration were recorded and compared.

Results: Following the intervention, the experimental group significantly improved in all respiratory parameters, such as vital capacity and 40 mmHg test values, breath-holding time inspiration, and expiration. No adverse effects were observed in the participants during the study period. Two-way repeated measures analysis of variance did not show statistical significance among overall group comparisons in the vital capacity (p=0.697). The overall test comparison showed significance (p<0.001).

Conclusion: This study may conclude that significant improvement in respiratory parameters in the experimental group following the intervention. The study results may provide preliminary support for the efficacy of conch blowing in improving pulmonary function in regular smokers with mild-to-moderate COPD. Further detailed studies were recommended.

Keywords: Conch blowing, Chronic obstructive pulmonary disease, Pulmonary function test, Vital capacity, Smokers.

 DOI: http://dx.doi.org/10.22159/ajpcr.2025v18i6.54729. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

In India, blowing conch is a custom. Numerous Indian ceremonies make use of this act. Both the sound and the music created from them have a calming impact on the emotions and the mind. Conchs typically make sounds that are in tune with human minds, which helps to calm the mind. The generated vibrations may have a beneficial psychological impact on the respiratory and cardiovascular systems. Typically, conch is composed of magnesium and calcium. In actuality, they are the medium and giant snails' shells. A significant emblem in many Indian faiths is the conch. Conch blowing has been shown to help lessen obstructive sleep apnea symptoms [1].

Research studies also demonstrated the impact of conch blowing on electroencephalogram. One of the main risk factors for developing chronic obstructive pulmonary disease (COPD) is smoking [2,3]. Based on the results of the pulmonary function test (PFT), it is categorized as mild to moderate. In COPD, the number of PFT values is decreased. The PFTs are used to assess the disease's prognosis or improvement. For COPD, there are various therapy options, and the choice of method also depends on how severe the condition is. Adjuvant therapy may be used in addition to or instead of these treatments. For COPD treatment, for instance, Chinese medications are taken in addition to Western medications [3]. Non-pharmacological research is now offered as an adjunct therapy for the management of COPD. For instance, it was discovered that Chuna manual treatment was beneficial for COPD patients, as evidenced by improvements in several PFT measures [4].

It is now widely recognized that one of the elements contributing to dyspnea in patients with severe COPD is functional respiratory muscle weakening [5]. As a result, respiratory muscle exercise training will enhance PFT and decrease the frequency of hospital readmissions for these individuals. Thus, practicing breathing techniques can help COPD patients experience less severe dyspnea [6]. Yoga also helped these patients' 6-min walk distance and forced expiratory volume in 1 s [7]. Conversely, in older people, pranayamas can enhance PFTs. In this instance, the pranayama is specifically mentioned as Bhastrika pranayama, which involves the individual forcing their way out of the pranayama [8]. It should be mentioned that the individual must exhale forcefully while blowing the conch. The full control of COPD remains a fantasy. It impacts not just the patient themselves, but also the family and the community at large. One of the illnesses covered by the palliative care system is COPD. COPD also places a financial strain on the family and the community.

There is a paucity of information on the effects of conch blowing on respiratory parameters. Therefore, there is a need to explore the effects of conch blowing on respiratory parameters, especially in countries like India, where conch blowing is a custom. Therefore, the current study was designed and conducted by recruiting smokers with mild to moderate COPD to investigate the impact of conch blowing on the PFT. To the best of our knowledge, this is the first research study on how conch blowing improves PFT in COPD patients.

Aim

The present study was undertaken to observe the efficacy of 24 weeks of conch-blowing practice as an alternative therapy in improving the pulmonary functions of regular smokers with mild-to-moderate COPD.

METHODS

Study setting

The study was conducted at the Department of Pulmonary Medicine in collaboration with the Department of Physiology of NRI Institute of Medical Sciences (NRIIMS), Sangivalasa, Visakhapatnam, Andhra Pradesh, India.

Study duration

November 2023–November 2024.

Study design

The study has a 1:1 distribution of participants in the control and intervention groups. After recording the baseline values of the participants, conch blowing was administered as an intervention to the intervention group and no intervention to the control group for 24 24-week period. After 24 weeks, post-intervention tests were performed in both groups and compared.

Study participants

A total of 30 male regular smokers with mild to moderate COPD were recruited into this study after obtaining voluntary, written informed consent. After following the inclusion and exclusion criteria, the study participants were recruited from the outpatient department of the Department of Pulmonary Medicine, NRIIMS, Sangivalasa, Visakhapatnam, Andhra Pradesh, India.

Ethical considerations

The study protocol was approved by the Institutional Ethics Committee (IEC/NRI/94/2023).

Inclusion criteria

Study subjects willing to participate in the study, participants within the age group of 30–60 years who have smoked at least 100 cigarettes in their lifetime and who now smoke every day, with a minimum smoking history of 5 years [9] (Center for disease control and prevention) with mild to moderate COPD, not already practicing conch blowing or any other alternative therapies were included in the study.

Exclusion criteria

Subjects not willing to participate in the study, participants with severe complications, chest deformities, and a history of surgery were excluded from the study.

After recruiting, the participants were randomly assigned to two groups, with 15 participants in each group using computer-generated random numbers (randomizer.org).

Control group (n=15)

Prescribed treatment was provided for 24 weeks.

Intervention group (n=15)

Conch blowing was practiced as an alternative therapy along with prescribed treatment for 24 weeks.

Conch blowing

7 inches white conch with dimensions of L × W: 18 × 8.5 cm, made up of ceramic, marble was used in the present study. The participants were trained for a week on blowing a conch. The intervention duration was 6 weeks, with 2 sessions a day, morning and evening, for 5 days a week. Each session comprises blowing the conch 3 times with a duration of 10 s.

Outcome measures

After recruitment, all the participants undergo a general physical examination, which ensures the record of the demographic data of the participants. PFTs were performed soon after the general physical examination. Pre- and post-intervention data were collected and compared. All the parameters were recorded between 10 and 11 am for the convenience of the participants and to avoid diurnal variations, if any.

Vital capacity

Vital capacity was recorded using the simple spirometer. Three readings were recorded, and the best of the three was considered.

40 mmHg test

Participant blows into the mercury sphygmomanometer with maximum effort to raise the mercury column to 40 mmHg. Once he reaches 40 mmHg, it should be maintained at 40 mmHg. The amount of time he maintained it at 40 mmHg was recorded.

Breath-holding time-inspiration (BHT-I)

The participant takes a deep inspiration and holds the breath. The time interval from holding to breaking point was recorded [10].

Breath-holding time-expiration (BHT-E)

A participant takes a deep expiration and holds the breath. The time interval from holding to breaking point was recorded [10].

Statistical analysis

The demographic details such as age, height, weight, and body mass index (BMI) were represented as mean and standard error (SE). The means of the control and experimental groups were analyzed by the Student's "t" test. The data on vital capacity, 40 mmHg test, breath-holding time-inspiration, and breath-holding time-expiration are represented as mean and SE and analyzed by two-way repeated measures analysis of variance (RM ANOVA) for one-factor repetition, and Bonferroni's "t" test for *post hoc* multiple comparisons. Factor A was groups (between-group comparison - control and experimental). Factor B, was tests (within group comparison, i.e., repetition factor - baseline, 12 weeks and 24 weeks) and the group x-test interaction. A probability of 0.05 or less was considered statistically significant. SigmaPlot 14.5 version (Systat Software Inc., San Jose, USA) was used for statistical analysis. The sample size was estimated for a 25% difference between the means of the dependent variables of the control and experimental groups, with 20% standard deviation, 90% power, and 5% significance level. The estimated sample size was 15 for each group (total 30 participants). SigmaPlot 14.5 version (Systat Software Inc., San Jose, USA) was used for the sample size calculation.

RESULTS

The present study was undertaken to observe the efficacy of 24 weeks of conch-blowing practice as an alternative therapy in improving the pulmonary functions of regular smokers with mild-to-moderate COPD. This study involved 30 male regular smokers with mild to moderate COPD patients who were randomly assigned to two groups with 15 participants in each group.

The comparison of age, height, weight, and BMI of control and experimental groups is given in Table 1. The mean ages of the control and experimental groups were 46.6 and 47.7 (years), respectively, and were insignificant (p=0.762). The mean height of control and experimental groups were 174.1 and 172.9 (cm) respectively, and was not statistically significant (p=0.31). The mean weight of control and experimental groups were 63.9 and 65.3 (kg), respectively, and it was statistically not significant (p=0.29). BMI of control and experimental

Table 1: Comparison of age, height, weight, and body mass index of control and experimental groups

S. No.	Variable	Groups	Mean	SE	Statistics
1	Age (years)	Control	46.6	2.5	t=0.305
		Experimental	47.7	2.7	p=0.762
2	Height (cm)	Control	174.1	0.8	t=1.035
		Experimental	172.9	0.8	p=0.310
3	Weight (kg)	Control	63.9	0.8	t=1.078
		Experimental	65.3	1.0	p=0.290
4	Body mass index (kg/m^2)	Control	21.1	0.1	t=1.759
		Experimental	21.9	0.4	p=0.090

n=15 each in the control and experimental groups. The "t" and "p" values are by the Student's "t" test. SE: Standard error

groups were 21.1 and 21.9 (kg/m^2), respectively, and it was also insignificant (p=0.09), showed that the control and experimental groups were homogeneous (Table 1).

The mean and SE of vital capacity and 40 mmHg test are given in Table 2. Two-way RM ANOVA did not show statistical significance among overall group comparisons in the vital capacity (p=0.697). The overall test comparison showed significance (p<0.001). The overall group x-test interaction also showed significance (p<0.001). The between-group comparisons, control and experimental, baseline, 12 weeks, and 24 weeks did not show significance (p=0.990; 0.689 and 0.453, respectively). The within-group comparison of control baseline with 12 weeks, baseline with 24 weeks, and 12 weeks with 24 weeks did not show significance (p=1.0, 1.0, and 1.0, respectively). The within-group comparison of the experimental baseline with 12 weeks, baseline with 24 weeks, and 12 weeks with 24 weeks showed significance (p<0.001, <0.001, and <0.001, respectively). These results revealed that in the control group 1.6% increase in the vital capacity, while in the experimental group 22.0% increase from baseline to 24 weeks, showing the beneficial effect of the intervention.

A comparison of BHT-I and BHT-E in control and experimental groups is shown in Table 3. At baseline, the mean BHT-I was comparable between control (35.5±0.8 s) and experimental groups (36.1±0.8 s). Similarly, BHT-E was 27.3±1.1 s in the control group and 26.3±1.4 s in the experimental group. Over time, the control group showed minimal changes in both BHT-I and BHT-E. In contrast, the experimental group demonstrated a progressive and marked improvement, with BHT-I increasing to 47.1±0.5 s at 12 weeks and 54.5±0.7 s at 24 weeks, and BHT-E increasing to 32.5±0.8 s at 12 weeks and 37.9±0.9 s at 24 weeks. Two-way repeated measures ANOVA revealed a statistically significant main effect of time on both BHT-I (F=31.323, p<0.001) and BHT-E (F=31.559, p<0.001). Although the overall between-group effect was not statistically significant for BHT-I (F=0.876, p=0.357) or BHT-E (F=0.323, p=0.574), a significant interaction effect between group and time was observed for both BHT-I (F=52.202, p<0.001) and BHT-E (F=44.440, p<0.001), indicating differential changes over time between the two groups. The between-group comparisons, control and experimental, baseline, 12 weeks, and 24 weeks did not show significance in BHT-I (p=0.956, p=0.299, p=0.103) and in BHT-E (p=0.901, p=0.546, p=0.235), respectively. The within-group comparison of control baseline with 12 weeks, baseline with 24 weeks, and 12 weeks with 24 weeks did not show significance (p=1.0, 1.0, and 1.0, respectively). The within-group comparison of experimental baseline with 12 weeks, baseline with 24 weeks, and 12 weeks with 24 weeks showed significance in both BHT-I and BHT-E (p<0.001, <0.001, and <0.001, respectively).

DISCUSSION

The conch, which is called the shank, has immense traditional and spiritual importance in Indian culture. Before starting any event, it is symbolic to blow the conch. It can be a prayer or a war like Kurukshetra. Concerning the Mahabharata, it is known that Lord Srikrishna blew the Panchajanya. It was believed that blowing the conch would give positive energy. Physiologically, blowing the conch offers an improvement in strengthening the respiratory muscles. The individual should be in an upright posture to blow the conch. Hence, the conch blowing is also beneficial for postural muscles. As the conch blowing is practiced for a long period, the amount of time the individual blows the conch will increase. That means the lung volumes are improved.

Table 2: Comparison of control and experimental groups on vital capacity and 40 mmHg test

S. No.	Groups	Weeks	Vital capacity (mL)	40 mmHg test (sec)
1	Control	Baseline	2893.3±44.4	16.7±0.9
	Experimental	Baseline	2903.3±44.3	15.2±0.8
	Control	12 weeks	2903.3±41.5	16.9±0.9
	Experimental	12 weeks	3223.3±25.8	19.5±0.8
	Control	24 weeks	2940.0±40.6	17.4±0.8
	Experimental	24 weeks	3543.3±11.8	23.8±0.8
2	Comparison of groups (control/experimental)		F=0.155 p=0.697	F=0.273 p=0.606
	Comparison of weeks (baseline/12 weeks/24 weeks)		F=31.795 p<0.001	F=33.592 p<0.001
	Interaction (groups and weeks)		F=46.319 p<0.001	F=48.105 p<0.001
3	Comparison of between groups - baseline (control/experimental)		t=0.0126 p=0.990	t=0.317 p=0.753
	Comparison of between groups - 12 weeks (control/experimental)		t=0.404 p=0.689	t=0.552 p=0.585
	Comparison of between groups - 24 weeks (control/experimental)		t=0.762 p=0.453	t=1.325 p=0.196
4	Comparison of within groups - control (baseline/12 weeks)		t=0.189 p=1.0	t=0.192 p=1.0
	Comparison of within groups - control (baseline/24 weeks)		t=0.881 p=1.0	t=0.959 p=1.0
	Comparison of within groups - control (12 weeks/24 weeks)		t=0.692 p=1.0	t=0.767 p=1.0
5	Comparison of within groups - experimental (baseline/12 weeks)		t=6.042 p<0.001	t=6.233 p<0.001
	Comparison of within groups - experimental (baseline/24 weeks)		t=12.083 p<0.001	t=12.369 p<0.001
	Comparison of within groups - experimental (12 weeks/24 weeks)		t=6.042 p<0.001	t=6.137 p<0.001

The values are mean±standard error (n=15 each in control and experimental groups). The "F," "t" and "p" values are two-RM analysis of variance with Bonferroni "t" test for multiple comparisons

Research studies on the effects of conch blowing on respiratory parameters were very limited. Hence, the present study may be the first study to explore the effect of conch blowing on respiratory parameters. In this study, there were no significant differences between the control and experimental groups in age, height, weight, or BMI, confirming demographic and anthropometric homogeneity at baseline. In terms of respiratory performance, vital capacity significantly improved in the experimental group over the 24 weeks, with a 22.0% increase compared to a 1.6% increase in the control group. Similarly, performance on the 40-mmHg test, which indicates autonomic function and baroreflex sensitivity, has improved significantly in the experimental group. These findings are consistent with earlier research suggesting that respiratory muscle training enhances pulmonary mechanics, lung compliance, and thoracic mobility [11]. The improvement in the 40 mmHg test values reflects an enhancement in autonomic nervous

Table 3: Comparison of control and experimental groups on breath-holding time inspiration and expiration

S. No.	Groups	Weeks	BHT-I (sec)	BHT-E (sec)
1	Control	Baseline	35.5±0.8	27.3±1.1
	Experimental	Baseline	36.1±0.8	26.3±1.4
	Control	12 weeks	35.7±0.8	27.6±1.1
	Experimental	12 weeks	47.1±0.5	32.5±0.8
	Control	24 weeks	36.4±0.8	28.3±1.2
	Experimental	24 weeks	54.5±0.7	37.9±0.9
2	Comparison of groups (control/experimental)		F=0.876 p=0.357	F=0.323 p=0.574
	Comparison of weeks (baseline/12 weeks/24 weeks)		F=31.323 p<0.001	F=31.559 p<0.001
	Interaction (groups and weeks)		F=52.202 p<0.001	F=44.440 p<0.001
3	Comparison of between groups - baseline (control/experimental)		t=0.0557 p=0.956	t=0.126 p=0.901
	Comparison of between groups - 12 weeks (control/experimental)		t=1.058 p=0.299	t=0.611 p=0.546
	Comparison of between groups - 24 weeks (control/experimental)		t=1.682 p=0.103	t=1.214 p=0.235
4	Comparison of within groups - control (baseline/12 weeks)		t=0.0891 p=1.0	t=0.275 p=0.1
	Comparison of within groups - control (baseline/24 weeks)		t=0.579 p=1.0	t=0.961 p=1.0
	Comparison of within groups - control (12 weeks/24 weeks)		t=0.490 p=1.0	t=0.686 p=1.0
5	Comparison of within groups - experimental (baseline/12 weeks)		t=7.303 p<0.001	t=6.315 p<0.001
	Comparison of within groups - experimental (baseline/24 weeks)		t=12.290 p<0.001	t=11.943 p<0.001
	Comparison of within groups - experimental (12 weeks/24 weeks)		t=4.987 p<0.001	t=5.628 p<0.001

The values are mean±standard error (n=15 each in control and experimental groups). The "F," "t" and "p" values are two-repeated measures analysis of variance with Bonferroni "t" test for multiple comparisons.
BHT-I: Breath-holding time-inspiration, BHT-E: Breath-holding time-expiration

system regulation, particularly parasympathetic activation, and baroreceptor responsiveness, both of which are sensitive to breathing techniques and respiratory modulation [12,13]. This is important, as improved baroreflex sensitivity is associated with better cardiovascular functions and overall autonomic balance.

However, Gurung reported a case study explaining the possibility of Valsalva retinopathy developed in a patient, followed by conch blowing, which was part of his daily ritual to pray to God as he was a Hindu priest. The study explained that conch blowing is similar to Valsalva, that is, expiration against a closed glottis. They suspected that due to an increase in the intraocular venous pressure, there may be damage to the retinal capillaries, which could cause blurred vision in the patient [14].

CONCLUSION

This study may conclude that there is significant improvement in respiratory parameters such as vital capacity and 40 mmHg test values, BHT-I and BHT-E in the experimental group. The study results may provide preliminary support for the efficacy of conch blowing in improving pulmonary function in regular smokers with mild-to-moderate COPD. Further detailed studies were recommended in this area with a larger number of participants.

ACKNOWLEDGMENT

We would like to thank the authorities of NRIIMS for their support and cooperation throughout the study. Special thanks to Dr. Rajeev Gandham, Assistant Professor, Department of Biochemistry, NRIIMS, for his valuable suggestions.

AUTHORS' CONTRIBUTION

All the authors equally contributed to the manuscript.

CONFLICT OF INTEREST

None declared.

SOURCE OF FUNDING

Self-funding.

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