








ORIGINAL RESEARCH ARTICLE

Combined Effect of *Bhramari* and *Nadi Shodhan Pranayama* on Anger Control among Security Personnel at Eastern India – An Experimental Study

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ABSTRACT

Background: Anger is a natural emotion, experienced by every individual. When it is uncontrollable and devastating, it can cause various physiological, psychological, and behavioral problems. Pranayama is very effective in reducing stress, anxiety, and anger. Security personnel are working in the front line and being called to safeguard others in high-risk situations. They are more prone to get injured at the workplace with unexpected attacks than any other professionals.

Aim: The aim of this study was to assess the anger among security personnel and the effect of Bhramari and Nadi Shodhan pranayama on anger control.

Materials and Methods: The study was conducted at the AYUSH Department of Tertiary Care Hospital of Eastern India. Pranayama was planned for anger control, which consisted of Bhramari and Nadi Shodhan pranayama, to be taught to 40 security personnel in a 2-week period. Anger was assessed by using a self-structured 'Anger Self-Report Questionnaire'.

Results: A significant reduction in anger was found in the experimental group compared with a control group.

Conclusion: *Bhramari* and *Nadi shodhan pranayama* were found to be effective for anger control among security personnel.

1. INTRODUCTION

Anger is a natural emotion of human beings. It is experienced by all individuals. It often encourages us to take protective action and attain our goal or break down obstructions. When it is uncontrollable and devastating, it can cause various physiological, psychological, and behavioral problems.^[1]

Spielberger had classified anger into two parts, i.e., anger experience and anger expression. Anger experience is experiencing emotional feelings along with physiological reaction, whereas anger expression means the way of reflecting anger toward self or others. Anger expression-in and expression-out are uncontrolled, defective ways of expressing anger. Anger control is a controlled, healthy way of anger resolution.^[2]

Anger can cause problems in the workplace, personal relationships, and the overall quality of life. Security personnel are working in the front line, being positioned to strengthen the security system of any organization and being called to any high-risk situations. They are more injured at the

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workplace by unexpected attacks than any other professionals.^[3] In 2010, a study conducted in Finland showed that 39% of security guards had experienced verbal aggression and 19% physical aggression.^[4]

Pranayama is a part of yogic science. It is derived from a 'Sanskrit Word', which contains two parts, i.e., 'Prana' (refers to the vital energy) and 'Ayama' (refers to controlling).^[5]

In Ashtanga yoga, Maharishi Patanjali also stated that pranayama means regulation of breath after attaining that stability of asana or posture. 'Pranayama' includes three aspects: Inhalation, retention, and exhalation of air.^[6]

A study found that practicing Pranayama would have beneficial effects on anger, stress, and quality of life, among college-going students.^[6] Bhramari and Nadi Shodhan pranayama both are very effective in reducing stress, anxiety, and anger.^[7] Bhramari Pranayama is helpful in 'instantly cooling down the brain' and also helps in reducing agitation, frustration, anxiety, and anger.^[8]

Bhramari pranayama is a deep and slow breathing technique. It is originated from a Sanskrit, means 'Bumble bee'. The technique includes quick breathing followed by 'making a reverberating sound like the male black bee', and slowly exhaling the breath while making the soft sound of the female black bee 'keeping the mouth closed by lips and ears closed by fingers'.^[9] Nadi Shodhan pranayama is also a deep and Slow breathing technique. Parasympathetic activity is increased by this technique. It calms the mind and helps to release stress.^[10]

In 2021, Alaka Mani *et al.* have developed and validated yoga modules for anger management in adolescents. In that, they have also mentioned about Bhramari pranayama and Nadi Shodhan pranayama.^[11] However, this area has not been well researched.

Very few studies have been conducted on anger control, to find out the effect of Bhramari pranayama and Nadi Shodhan pranayama on anxiety, stress, and anger.^[9,10,12]

Being a complex emotion, anger poses some serious challenges in implementing any anger management intervention. Pranayama, which is considered a holistic and integrated approach, is assessed in the present study. This present study was aimed to assess the anger among security personnel and the effect of Bhramari and Nadi Shodhan pranayama on anger control.

2. MATERIALS AND METHODS

2.1. Place of the Study

The place of study was AYUSH Department of Tertiary Care Hospital, Eastern India.

2.2. Period of Study

The period of data collection was from 16 November to 17 December 2023.

2.3. Selection of Study Sample

A simple random sampling technique was used. Eighty subjects were involved (40 in the experimental group and 40 in the control group). The plan are mentioned in Figure 1.

2.4. Inclusion Criteria

Security personnel working in tertiary care hospitals subjects who can understand Odia or Hindi, and subjects who were having less anger

control as per the anger assessment tool were included in both the control and experimental groups.

2.5. Exclusion Criteria

Security personnel who are practicing pranayama daily, having epilepsy, and being pregnant were excluded from the study.

2.6. Informed Consent

An informed consent was taken from each of the subjects included in the study.

2.7. Ethical Consideration

The study was approved by the Institutional Ethics Committee (IEC). This study was also registered with the Clinical Trials Registry-India (CTRI) under registration number CTRI: REF/2023/11/075152.

2.8. Materials and Tools Used

2.8.1. Sociodemographic pro forma

It was prepared in the department for collecting information on sociodemographic variables (age, gender, marital status, educational status, habitat, type of family, and family members).

2.8.2. Anger Self-Report Questionnaire

This tool was developed by the researcher to assess the anger experience, anger expression-in, anger expression-out, and anger control. The tool consists of 21 items. It had 5 point Likert scale consisted the values:

- 1 = Never,
- 2 = Rarely,
- 3 = Sometimes,
- 4 = Often,
- 5 = Always.

2.9. Validity and Reliability of Research Tool

The tool was sent to different experts from different areas such as psychiatric specialty, community medicine specialty, psychiatric nursing, and clinical psychology to assess the validity and ensure the appropriateness of each item of the tool. The reliability of this tool was assessed to see the internal consistency of the tool among 20 security personnel. Cronbach's alpha score of that tool is 0.91.

2.9.1. Protocol for pranayama

The experimental group received Bhramari and Nadi Shodhan pranayama intervention for 10 min for 15 days according to the planning of pranayama, developed by the researcher in accordance with the yoga instructor from the AYUSH department. The pranayama was started with the mantra chanting and ended with the chanting of 'Om' 3 times.

The intervention was given at 5 am for continuously 15 days with the presence of the researcher and the yoga instructor in the Yoga room of the AYUSH department.

The researcher received training and was certified for providing Bhramari and Nadi Shodhan pranayama intervention to the participants.

2.10. Statistical Analysis of Data

Primary data were analyzed by descriptive statistics and by hypothesis testing methods, using statistical software, Statistical Package for the Social Sciences (SPSS version 21.0 Inc., Chicago, IL).

The following descriptive methods were used: measures of central tendency (mean), variability measures (standard deviation). The following hypothesis testing methods were employed: Chi-square test, paired t-test, and independent t-test. The probability threshold of the research hypothesis was set at 0.05 ($P < 0.05$).

3. RESULTS

The study enrolled 80 participants. The sociodemographic data are summarized in Table 1.

Based on sociodemographic characteristics, no significant difference was found between the groups. Both groups were comparable in terms of age ($P = 0.70$), gender ($P = 1$), marital status ($P = 0.71$), number of children ($P = 0.79$), place of stay ($P = 0.38$), living arrangements ($P = 0.42$), education ($P = 0.15$), and habits ($P = 0.48$).

To check the effect of pranayama on anger control among security personnel, paired t-test was computed and found to be effective ($P < 0.05$) in reducing the anger scores among the experimental group [Figures 2 and 3].

4. DISCUSSION

The present study has shown that Bhramari and Nadi Shodhan pranayama are effective for anger management for security personnel.

After 15 days of implementation of Bhramari and Nadi Shodhan Pranayama in the experimental group, there was a significant reduction in the anger score, whereas in the control group, the anger score remains almost the same.

4.1. Sample Characteristics

In the present study, most of the participants were in the age group between 31 and 45 years in the experimental group 62.5%, and in the control group 52.5%. Most of the security officers were male in both groups 80%. 87.5% were married in the experimental group and 92.5% in the control group. 65% were graduated in the experimental group and 42.5% in the control group. Moreover, 72.5% were living with spouse and children in the experimental group and 80% in the control group.

In the study, conducted by Priyanka *et al.*, on the effect of Surya Namaskar on anger management, most of the patients (36.7% in the experimental group and 33.3% in the control group) were in the age group between 31–39 years. All participants were male in both groups. In the experimental group, 70% were married and 56.7% in the control group. 43.33% were graduated in the experimental group and 20% in the control group.^[13]

Zarshenas *et al.* conducted an interventional study on anger management of substance abuse patients, there also it was seen that most of the participants were between the age group of 20 and 40 years and a few of them were <20 years old. That was similar to the present study. However, 66% of the participants were single and 33% were married, which was not similar to the present study. In addition, 50, 38, and 11% of the participants had below diploma degrees, diplomas, and B.Sc. degrees, respectively.^[14]

4.2. Anger Score after Intervention

In the present study, the reduction in the mean score of anger (anger experience, anger expression-in, and anger expression-out) is greater in the experimental group as compared to the control group after

15 days of intervention. A current study has shown that Bhramari and Nadi Shodhan pranayama are effective for anger control among security personnel.

In an interventional study (2021), conducted by Maheswari *et al.* on anger management, had revealed that deep breathing exercises are effective to reduce anger among adolescents (mean \pm SD of pre-test 92.5 ± 19.1 ; post-test 68.95 ± 11.6 ; paired 't' test value = 12.91; $P < 0.001$).^[15]

In a study (2023) conducted by Kumar *et al.* on the 'effect of surya namaskar on anger management', there was a reduction in anger score after the training period in the experimental groups (pre-test mean anger score = 72.6 and post-test mean score = 64).^[16]

In those previous studies, it has been shown that pranayama (deep breathing exercises and Surya namaskar) are very effective measure for anger management.

On the other hand, an interventional study (2022), conducted by Sarkar Chiranjib, on the impact of pranayama on stress, anger, and quality of life among college students, had shown that there were beneficial effects of yogic exercises on the quality of life, anger, and stress. However, there were very less changes in post-test anger score from pre-test (mean \pm SD pre-test 51.3 ± 3.54 ; post-test 52.6 ± 3.5). The pranayama was performed 5 days a week, (for 12 weeks); whereas in the present study, the anger score was changed efficiently in the experimental group after continuous 15 days of pranayama intervention.^[6]

In the study conducted by Priyanka *et al.*, on the "effect of Surya Namaskar on anger management", "physical exercises" helped to manage "anger" for the experimental group. Reduction in the mean score of "trait anger" was greater in the interventional group as compared to the control group. On the other hand, there was a reduction in the mean score of "state anger" in both groups in the post-interventional assessment phase. From these findings, it could be interpreted that the control group was not completely deprived of other therapeutic measures (prescribed drugs, nursing care, psychotherapy, etc) except physical exercises.^[13]

In the present study, the mean score of anger (anger experience, anger expression in, and anger expression out) was reduced only in the experimental group. However, in the control group, the mean score of "anger control" was slightly reduced (pretest mean score of "anger control" = 50.1 ± 6.5 and post-test score = 49.6 ± 6.7). Other confounding variables like physical activity were not controlled in the control group as that is ethically unstopable.

Thus it can be concluded that Bhramari and Nadi Shodhan pranayama significantly helped in controlling the anger among security personnel.

4.3. Limitations

Other confounding variables like physical activity were not controlled in the control group and that is ethically unstopable.

5. CONCLUSION

Anger is a subjective, emotional reaction regarding one's psychological interpretation of having been insulted, or annoyed and a tendency to respond through undesirable response. Instead of suppression or expression, it should be controlled in an adaptive way, without any negative consequences to health and mind. On the basis of the present study, it can be concluded that Bhramari and Nadi Shodhan pranayama are effective for controlling anger among security personnel.

6. ACKNOWLEDGMENTS

Nil.

7. AUTHORS' CONTRIBUTIONS

All the authors contributed equally in the design and execution of the article.

8. FUNDING

Nil.

9. ETHICAL APPROVALS

The study was approved by the Institutional Ethics Committee (IEC). This study was also registered with the Clinical Trials Registry-India (CTRI) under registration number CTRI: REF/2023/11/075152.

10. CONFLICTS OF INTEREST

Nil.

11. DATA AVAILABILITY

This is an original manuscript and all data are available for only review purposes from principal investigators.

12. PUBLISHERS NOTE

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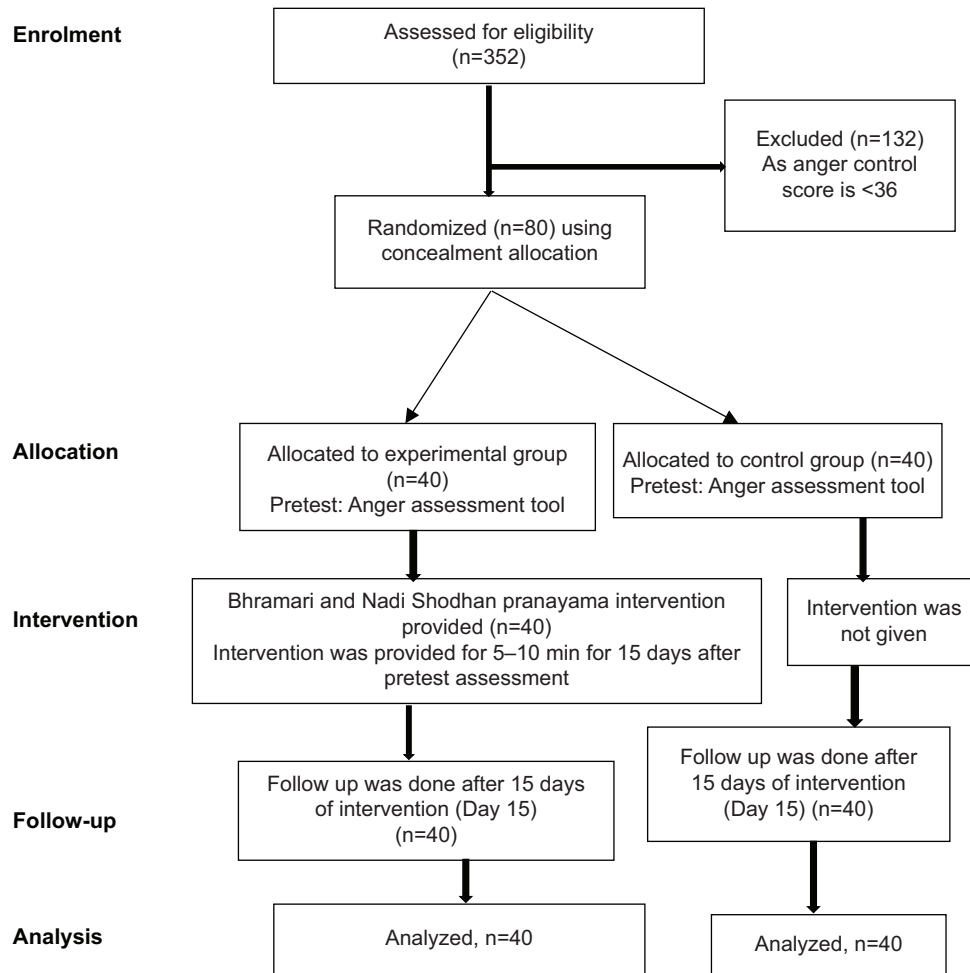


Figure 1: CONSORT flow diagram - Modified CONSORT – NPT (2017) depicting the flow of participants during the study

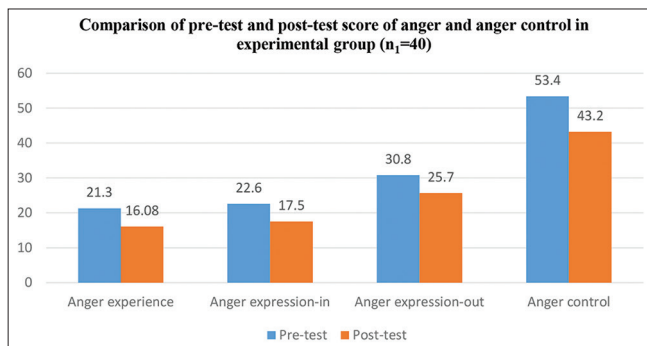


Figure 2: The pre-test and post-test mean score of anger and anger control of the experimental group

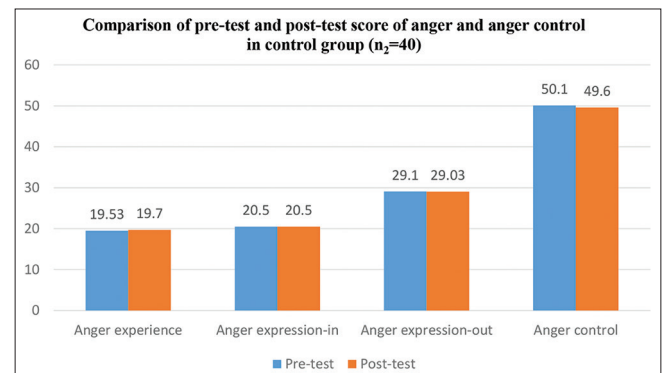


Figure 3: The pre-test and post-test mean score of anger and anger control of control group

Table 1: Socio-demographic characteristics of security personnel (N=80)

S. No.	Demographic variables	Experimental group n1=40 f (%)	Control group n2=40 f (%)	Test statistics P-value
1.	Age in years			
	18–30	12 (30)	15 (37.5)	Fisher's exact P=0.70
	31–45	25 (62.5)	21 (52.5)	
	>45	3 (7.5)	4 (10)	
2.	Gender			
	Male	32 (80)	32 (80)	$\chi^2 \leq 0.01$ P=1.00
	Female	8 (20)	8 (20)	
3.	Marital status			
	Unmarried/single	5 (12.5)	3 (7.5)	Fisher's exact P=0.71
	Married	35 (87.5)	37 (92.5)	
4.	No. of children			
	0	7 (17.5)	5 (12.5)	Fisher's exact P=0.79
	1	25 (62.5)	28 (70)	
	2	7 (17.5)	7 (17.5)	
	>2	1 (2.5)	0	
5.	Place of stay			
	Urban	18 (45)	12 (30)	$\chi^2 = 2.13$ P=0.38
	Semi urban	8 (20)	12 (30)	
	Rural	14 (35)	16 (40)	
6.	Living arrangements			
	Living alone	3 (7.5)	4 (10)	Fisher's exact P=0.42
	With parents/siblings	3 (7.5)	0	
	With spouse	5 (12.5)	4 (10)	
	With spouse and children	29 (72.5)	32 (80)	
7.	Education			
	10 th pass	5 (12.5)	8 (20)	Fisher's exact P=0.15
	12 th pass	6 (15)	3 (7.5)	
	Graduation	26 (65)	17 (42.5)	
	Post-graduation and above	3 (7.5)	2 (5)	
8.	Habits			
	Smoking	6 (15)	10 (25)	Fisher's exact P=0.48
	Alcoholism	5 (7.5)	3 (7.5)	
	None	29 (72.5)	27 (67.5)	