Original Article

Effects of Therapeutic Back Massage on Pulmonary Functions, Frequency of Asthmatic Attacks and Anxiety in Asthmatic Patients

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ABSTRACT

Objective: The purpose of this study was to assess how therapeutic back massage affected asthmatic patients' anxiety levels, pulmonary functioning, and asthma attacks.

Study Design: Quasi-experimental study

Place and Duration of Study: This study was conducted at the Lahore School of Nursing, The University of Lahore from August 2025 to November 2025.

Methods: A quasi-experimental study design, involving asthma patients at a tertiary care hospital in Rawalpindi who were assigned to either an intervention or control group. A convenient sample of n=35 asthma patients was recruited in each group. The intervention group received structured back massage sessions in addition to routine medical care, while the control group continued to receive standard care alone. Pulmonary function parameters were assessed using a digital spirometer, anxiety levels were evaluated using the Beck Anxiety Inventory, and the frequency of asthma attacks was recorded before and after the intervention. At the end of data collection, the data were entered and analyzed using SPSS version 25, considering a P-value < 0.05 as significant.

Results: The findings revealed a statistically significant improvement in pulmonary function, such as Forced Expiratory Volume in 1 second and Peak Expiratory Flow, Anxiety level, and Asthma attack among patients who received therapeutic back massage compared to those in the control group $p < 0.001$), at the second and third follow-up after 2 months from the start of the therapeutic back massage.

Conclusion: The study concludes that back massage is an effective, safe, and cost-efficient complementary therapy that positively influences both physiological and psychological outcomes in asthma patients.

Key Words: Back Massage, Pulmonary functions, Anxiety level, Asthmatic attack, Forced expiratory volume, Peak expiratory flow, Asthma patient

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INTRODUCTION

Asthma is a respiratory condition characterized by recurring airway obstructions[1], leading to breathlessness, wheezing, chest tightness, increased bronchial mucus production, and coughing[2]. Despite advancements in medical approaches, many asthmatic patients experience persistent symptoms and seek alternative methods to solve the problem of their difficult respiration[3].

Asthma is a worldwide prevalent disease[4]. 27% of people suffer from asthma worldwide, of which 14 % are females, and 13% are males, but due to more cigarette smoking, males are more prone to developing asthma[5]. Asthma affects all stages of life for people around the world[6]. Asthma affects children, adolescents, and older adults similarly all over the world.

In Pakistan, the prevalence of asthma is very high[7]. Pakistan is the fifth most populous country in the world, with approximately 221 million people. 4.3% of them are suspected to suffer from asthma, with 5/1000 annual new cases and 2.9/1000 of them bearing inpatient hospital stays every year[8]. This high prevalence of asthma causes serious concerns for healthcare services because there is much evidence that many deaths caused by asthma can be prevented through efficient management[9].

Asthma has deep roots in Pulmonary functions[10,11]. People with reduced pulmonary function are managed with pharmacological methods[12] to restore airway patency[13]. One understudied complementary management of asthma with the potential to improve pulmonary function is therapeutic back massage[14]. Researchers hypothesized that reduced pulmonary function may respond to therapeutic back massage

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interventions[15] and subsequently improve asthma symptoms[16]. In all known asthma interventions, it is evident that asthmatic patients are not getting sufficient relief from conventional treatment of asthmatic attacks[17]. Therapeutic back massage is one of them[18]. It has been proven that therapeutic back massage is effective in improving lung function by increasing circulatory flow towards the lungs[19].

METHODS

A quasi-experimental two-group case–control study was conducted among adult male asthma patients (18–65 years) at a tertiary care hospital in Rawalpindi from August to November 2025. Using non-probability convenience sampling, 70 patients were enrolled (35 intervention, 35 control) after ethical approval and informed consent. Baseline data on demographics, anxiety, frequency of asthmatic attacks, and pulmonary functions (FEV_1 and PEF) were collected. The intervention group received therapeutic back massage for 20 minutes daily for one month along with routine treatment, while the control group received routine care only; family members were trained to continue massage at home with educational support and follow-up. Outcomes were assessed at 15 days, one month, and two months post-intervention. Data were analyzed using SPSS version 25 with descriptive statistics and inferential tests (independent t-test and Mann-Whitney U test), considering $p < 0.05$ as statistically significant.

RESULTS

Table 1 summarizes the demographic characteristics of participants in the control and intervention groups. Participants were similarly distributed across age groups, with most falling between 30–50 years in both groups. All participants were male, as per inclusion criteria. The majority in both groups had a height of 161–170 cm and weighed between 61–70 kg. Regarding smoking status, nearly half of the participants in both groups were non-smokers, followed by past smokers, while current smokers constituted the smallest proportion in each group.

Table 2 presents inferential comparisons of FEV_1% between the control and intervention groups across four assessments. No significant difference was observed at baseline or the first follow-up.

Tables No. 1: Demographic characteristics of the control group (n=35) & interventional group (n=35)

Demographic characteristics	Control F (%)	Interventional group F (%)
Age		
18-30 years	7 (20%)	7 (20%)
31-40 years	14 (40%)	12 (34.3%)
41-50 years	9 (25.7%)	10 (28.6%)
51-65 Years	5 (14.3%)	6 (17.1%)
Gender		
Male	35 (100%)	35 (100%)
Height in Cm		
150-160 Cm	4 (11.4%)	6 (17.1%)
161-170 Cm	23 (65.8%)	20 (57.1%)
More than 170 Cm	8 (22.8%)	9 (25.8%)
Weight in Kg		
61-70Kg	23 (60%)	16 (45.7%)
71-80Kg	11 (31.42%)	16 (45.7%)
>80Kg	3 (8.6%)	3 (8.6%)
Smoking Status		
Never Smoked	16 (45.7%)	17 (48.6%)
Current Smokers	4 (11.4%)	4 (11.4%)
Past smoking	15 (42.9%)	14 (40%)

Table No. 2: Inferential statistics Lung Functions (FEV1) Control versus intervention (n=70)

FEV1 (%) Assessments	Control Group	Intervention group	Mean Difference	t	Significance (2-tailed)
	Mean + SD	Mean + SD			P. value
Base Line	65.54± 4.828	66.17± 4.920	-.629	**-.539**	.591
1st Follow Up	66.71± 4.631	68.20± 4.910	-1.486	-1.302	.197
2nd Follow Up	67.66± 4.505	78.86± 4.723	-11.200	-10.153	.000
3rd Follow Up	68.63± 4.466	79.63± 4.366	-11.00	-10.419	.000

Independent t- test with p<.05 value as significant

Table No. 3: Inferential statistics Lung Functions (PEF) Control versus intervention (n=70)

Assessments	Control Group	Intervention group	Mean Difference	t	Significance (2-tailed)
	Mean + SD	Mean + SD			P. value
Base Line	191.43± 17.34	191.83± 13.603	-.400	**-.107**	.917
1st Follow Up	198.40±27.307	203.83±16.017	-5.429	-1.014	.314
2nd Follow Up	201.49±21.485	264.57±33.139	-63.086	-9.450	.000
3rd Follow Up	205.6± 20.770	279.23±36.703	-74.171	-10.404	.000

Independent t- test with p<.05 value as significant

Table No. 4: Inferential statistics Anxiety Control versus intervention (n=70)

Variable	Status	Control (Mean Rank ± SD)	Interventional (Mean Rank ± SD)	Z test	p-value
Anxiety	Pre Intervention	38.76 ± 3.633	32.24 + 3.705	-1.347	0.178
	1st follow-up	36.99± 1.781	34.01 + 4.878	-.619	0.536
	2nd follow-up	52.66 ± 3.813	18.34 ± 9 .286	-7.080	0.000
	3rd Follow-up	50.54 ± 10.769	20.46 ± 8.241	-6.203	0.000

Mann-Whitney U test with p<.05 value as significant

Table No. 5: Inferential statistics Asthma Control, Control versus intervention (n=70)

Variable	Status	Control (Mean Rank ± SD)	Interventional (Mean Rank ± SD)	Z test	p-value
Asthma Control	Pre Intervention	36.49 ± 1.110	34.51 + .657	-.430	0.668
	1st follow-up	30.67± 1.147	40.33 + 1.629	-2.074	0.038
	2nd follow-up	18.00 ± .822	53.00 ± .453	-7.473	0.000
	3rd Follow-up	18.00 ± 1.485	53.00 ± .631	-7.317	0.000

Mann-Whitney U test with p<.05 value as significant

However, from the second follow-up onward, the intervention group showed a highly significant improvement in FEV_1 compared with the control group ($p < 0.001$). Overall, the findings indicate a strong positive effect of the intervention on lung function, while changes in the control group remained minimal.

Table 3 presents inferential comparisons of PEF between the control and intervention groups across four assessments. No significant differences were observed at baseline or the first follow-up. However, the intervention group showed a highly significant improvement in PEF from the second follow-up onward compared to the control group ($p < 0.001$), and this improvement was sustained at the third follow-up. Overall, the findings indicate a strong positive effect of the intervention on lung function, while the control group showed minimal change.

Table 4 shows the Mann–Whitney U test results comparing anxiety levels between control and intervention groups (n=70) across four assessments. Anxiety levels were similar at pre-intervention (p=0.178) and first follow-up (p=0.536). Significant reductions in anxiety were observed in the intervention group at the second (p<0.001) and third follow-ups (p<0.001), indicating the intervention effectively decreased anxiety over time.

Table 5 presents Mann–Whitney U test comparisons of asthma control scores between the control and intervention groups across four assessments. Both groups had similar baseline scores (p=0.668). The intervention group showed significant improvement at the first follow-up (p=0.038) and highly significant improvements at the second and third follow-ups (p<0.001), while the control group showed no meaningful change. These results indicate the intervention produced a significant and sustained enhancement in asthma control.

DISCUSSION

Forced Expiratory Volume in one second (FEV1), a measure of lung function, showed a clinically significant improvement in the intervention group. The current study's results are in excellent agreement with an increasing amount of data demonstrating the efficacy of supplementary and nursing-led treatment approaches in enhancing lung function[20]. Similar to this, a previous study found that a structured thoracic massage intervention given over six consecutive days significantly improved pyrometric parameters, including FEV_1, and that these improvements persisted across several follow-up periods[21]. Previous studies with varied intervention durations and participant demographics also reported significant post-intervention improvements in FEV_1, with the intervention group demonstrating superior outcomes[22]. Additionally, a significant improvement in mean FEV_1 values from 1.91 ± 0.51 to 2.45 ± 0.34 after intervention ($p = 0.0001$) was found by[23], supporting the physiological advantages of organized therapy techniques.

After receiving a back massage, the participants in the intervention group showed a significant and clinically significant improvement in peak expiratory flow (PEF), according to the current study. The current study's results are in line with a previous study found that patients with COPD who got back massage nurse treatments had significantly higher PEF than those who received standard care in a randomized controlled trial. In particular, the intervention group's post-intervention PEF values were considerably higher than those of the control group[20]. Further evidence is provided by[24], who found that the experimental group's mean PEF values increased statistically significantly after manual therapy, from 296.3 ± 110.8 to 316.1 ± 119.1 ($p = 0.018$).

After receiving a back massage, individuals in the intervention group showed a marked and statistically

significant decrease in anxiety, according to the current study. The current study's findings are in line with a previous study, patients who received massage-based therapies had significantly lower anxiety scores than those who received standard care[25]. Similarly, patients who got massage therapy in addition to noninvasive positive pressure ventilation (NIPPV) showed a significant reduction in anxiety and a shorter period of ventilator dependence than those who had NIPPV alone[28]. These results imply that for individuals with respiratory impairment, massage therapy may improve both clinical outcomes and psychological comfort.

Asthma control scores significantly increased from 7.54 ± 0.66 at baseline to 21.69 ± 0.63 at the third follow-up, indicating significant improvements in overall asthma symptom management after the intervention. The noted gains are in line with other research demonstrating that organized interventions can greatly improve asthma outcomes, such as lowering exacerbations and enhancing control[27]. This is similar to the increases in control scores observed in the current trial, where fewer exacerbations were probably caused[20] by better symptom awareness, self-management, and physiological function.

CONCLUSION

According to the study's findings, back massage is a useful, non-pharmacological supplemental therapy for enhancing lung function and lessening the frequency and intensity of asthma attacks in asthmatic patients. The results suggest that organized back massage recipients significantly improved important lung measures, indicating improved airway function and respiratory efficiency. These physiological advantages imply that back massage may increase ventilation, encourage respiratory muscle relaxation, and enable better chest wall expansion. All things considered, this study offers compelling proof that back massage is a safe, affordable, and simple nursing intervention that may be included in standard asthma care.

Recommendations of Study: Based on the findings of this study, the following recommendations can be made: Larger sample sizes from a variety of healthcare settings should be used in future research to improve the findings' external validity and generalizability.

To assess the long-term and sustained effects of back massage on asthma control and lung function, longitudinal studies with prolonged intervention and follow-up periods are advised.

Future research should utilize rigorous randomized controlled trial designs with appropriate allocation concealment to strengthen causal inference and minimize bias.

Consistency and reproducibility across studies will be enhanced by creating and evaluating standardized, evidence-based massage protocols (duration, frequency, pressure, and methods).

The best supplementary strategy may be found by comparing back massage with other non-pharmacological treatments (such as breathing techniques, relaxation therapy, or aromatherapy).

Ethics, Approval, and consent to participate: The rules and regulations set by the research ethical committee (REC) of the University of Lahore were followed while conducting the research, and the rights of the research participants were respected. Written informed consent was taken from all the participants. All information and data collection were kept confidential. Participants were kept anonymous throughout the study.

After receiving approvals from the REC, permission was granted from the administration of the selected setting. The asthma patients were informed about the study during an introduction session. Participants gave their informed consent to participate in the study.

Availability of data and materials: Due to a data protection policy, the datasets created and/or analyzed during the current work are not publicly available, although they can be obtained from the corresponding author upon reasonable request.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Rab Nawaz, Azeem Kaleem
Drafting or Revising Critically:	Rab Nawaz, Sarfraz Masih
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

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REFERENCES

1. Da Rocha Rodrigues G, Anex A, Boegli M, Bollondi Pauly C, Curtin F, et al. Is massage a legitimate part of nursing care? A qualitative study. PLoS One 2023;18(2):e0281078.
2. Rajotiya S, Mishra S, Singh AK, Singh P, Bareth H, Singh M, et al. Post-COVID-19 cardio-pulmonary manifestations after 1-year of SARS-CoV-2 infection among Indian population: a single centre, case-control study (OneCoV2 study). J Infection and Public Health 2024;17(1):145-51.
3. Zedan ZR, El-Nabie A, Ahmad SAE-D, Husien Khalf MM. Management of Bronchial Asthma in Children and Physical Therapy Role. Benha Int J Physical Therapy 2024;2(2):53-62.
4. Patel N. An update on COPD prevention, diagnosis, and management: The 2024 GOLD Report. The Nurse Practitioner 2024;49(6):29-36.
5. Khan S, Iqbal S, Azam A, Qadeer S, Khanam S. Prevalence and determinants of Asthma in adults in

Khyber Pakhtunkhwa, Pakistan. Abasyn J Life Sciences 2022;5(2):26-32.
6. Alsalamah RM, Sulaiman A, Sulaiman AA. Knowledge and Awareness of Mothers of Asthmatic Children and Its Impact on Asthma Control: A Cross-Sectional Study from Qassim Region, Saudi Arabia. Cureus 2024;16(6).
7. Abuaish S, Eltayeb H, Bepari A, Hussain SA, Alqahtani RS, Alshahrani WS, et al. The association of asthma with anxiety, depression, and mild cognitive impairment among middle-aged and elderly individuals in Saudi Arabia. Behavioral Sciences 2023;13(10):842.
8. Naeem F, Sabar MF, Ghani MU, Ul Ain Q, Zafar Q-u-A. Identification of Prognostic Genes Associated with Asthma in Pakistan. Pak J Zool 2022:1-9.
9. Song P, Adeloye D, Salim H, Dos Santos JP, Campbell H, Sheikh A, et al. Global, regional, and national prevalence of asthma in 2019: a systematic analysis and modelling study. J Global Health 2022;12:04052.
10. Sarikhani E, Fazeli A, Hosseini M, Afrasiabifar A, Doulatabad SN. The Effect of Reflexology versus Stroke Massage on Respiratory Symptoms in Patients with Bronchial Asthma. J Evidence-based Care 2023;13(3).
11. Melén E, Zar HJ, Siroux V, Shaw D, Saglani S, Koppelman GH, et al. Asthma inception: epidemiologic risk factors and natural history across the life course. Am J Respiratory Critical Care Med 2024;210(6):737-54.
12. Wulandari S, Wibowo TA. Pengaruh Slow Stroke Back Massage (SSBM) terhadap Kecemasan pada Penderita Diabetes Melitus Tipe 2 di Wilayah Kerja Puskesmas Juanda Kota Samarinda. Borneo Studies and Res 2020;2(1):189-94.
13. Versi A, Azim A, Ivan FX, Abdel-Aziz MI, Bates S, Riley J, et al. A severe asthma phenotype of excessive airway Haemophilus influenzae relative abundance associated with sputum neutrophilia. Clinical and Translational Med 2024;14(9):e70007.
14. Jonely H, Jayaseelan D, Costello E, Signorino J, Wooten L, Murray D, et al. Changes in pulmonary function following thoracic spine manipulation in a healthy inactive older adult population—a pilot study. J Physical Therapy Sci 2023;35(7):492-6.
15. Ogbu CE, Oparanma C, Ogbu SC, Ujah OI, Okoli ML, Kirby RS. Trends in the use of complementary and alternative therapies among US adults with current asthma. Epidemiologia 2023;4(1):94-105.
16. Garagorri-Gutierrez D, Leiros-Rodriguez R. Effects of physiotherapy treatment in patients with bronchial asthma: A systematic review. Physiotherpy Theory Pract 2022;38(4):493-503.
17. García de la Fuente A, Arismendi E, Pascal M, Picado C. Asthma, Infections and Immuno-deficiency. J Respiration 2025;5(4):20.
18. Bains D, Chahal A, Shaphe MA, Kashoo FZ, Ali T, Alghadir AH, et al. Effects of Muscle Energy Technique and Joint Manipulation on Pulmonary Functions, Mobility, Disease Exacerbations, and Health-Related Quality of Life in Chronic Obstructive Pulmonary Disease Patients: A Quasiexperimental Study. BioMed Res Int 2022;2022(1):5528724.
19. Kristinawati B, Handika BV, Rizkiawan A, Mardana NW, Wijayanti NWD. Effects of Massage Therapy on Anxiety in Heart Disease Patients: A Systematic Review. Nurse Media J Nursing 2025;14(3):390-404.
20. Zhang F, Zhu P. Effects of emergency nursing interventions on the outcome of patients with chronic obstructive pulmonary disease: A randomized controlled trial. Med 2025;104 (42):e45009.
21. Sharma N, Ajit ND, Shankaregowda AM. Effect of Naturopathy thorax massage on spirometric variables among healthy individuals. Ind J Traditional Knowledge (IJTK) 2025;24(8):749-57.
22. Xu F, Zhu S, Liu Y. Application of acupoint massage combined with Acupoint Application in the stable stage of chronic obstructive pulmonary disease. TMR Non-Drug Ther 2022;5(3):12.
23. KHEDEKAR RC, DOBHAL SP, MISHRA A. Effect of Soft Tissue Manual Technique and Breathing Exercises on Pulmonary Function, Chest Expansion and Functional Status in Post COVID-19 Survivors: A Quasi-experimental Study. J Clinical Diagnostic Res 2023;17(5).
24. Küçük E, Tozcu D, Topaktaş B, Coşkun G. Immediate effects of manual therapy on respiratory functions in healthy young individuals: a randomized controlled trial. Scientific Reports 2024;14(1):17419.
25. Yilmaz CK, Aşiret GD, Çetinkaya F. The effect of back massage on physiological parameters, dyspnoea, and anxiety in patients with chronic obstructive pulmonary disease in the intensive care unit: a randomised clinical trial. Intensive and Critical Care Nursing 2021;63:102962.
26. Liu M, Shi Y, Zhang B, Ma Z, He Q, Duan X. Effect of Acupoint Application and Massage on the Comfort Degree and Stress State of Patients Undergoing Noninvasive Mechanical Ventilation due to Acute Chronic Obstructive Pulmonary Exacerbation in Dali, China. Nigerian J Clinical Practice 2025;28(7):838-47.
27. Li H, Zhang X, Zhao Q, Bai X, Wang S. Effect of a combination of Tuina therapy and budesonide inhalation on asthma in children, and its influence on lung function and pro inflammatory f actors. Tropical J Pharmaceutical Res 2022;21(8):1723-9.