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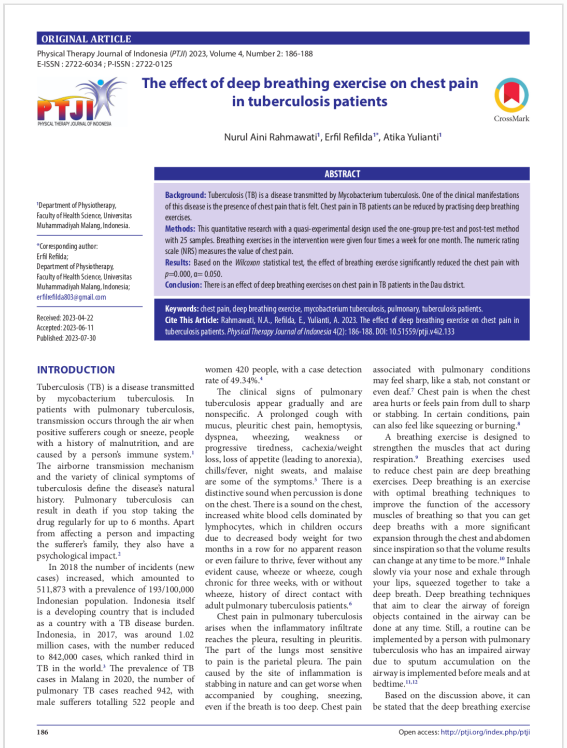

ORIGINAL ARTICLE

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The effect of deep breathing exercise on chest pain in tuberculosis patients

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ABSTRACT

Background: Tuberculosis (TB) is a disease transmitted by Mycobacterium tuberculosis. One of the clinical manifestations of this disease is the presence of chest pain that is felt. Chest pain in TB patients can be reduced by practising deep breathing exercises.
Methods: This quantitative research with a quasi-experimental design used the one-group pre-test and post-test method with 25 samples. Breathing exercises in the intervention were given four times a week for one month. The numeric rating scale (NRS) measures the value of chest pain.
Results: Based on the *Wilcoxon* statistical test, the effect of breathing exercise significantly reduced the chest pain with p=0.000, α= 0.050.
Conclusion: There is an effect of deep breathing exercises on chest pain in TB patients in the Dau district.

Keywords: chest pain, deep breathing exercise, mycobacterium tuberculosis, pulmonary, tuberculosis patients.
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INTRODUCTION

Tuberculosis (TB) is a disease transmitted by mycobacterium tuberculosis. In patients with pulmonary tuberculosis, transmission occurs through the air when positive sufferers cough or sneeze, people with a history of malnutrition, and are caused by a person's immune system.[1] The airborne transmission mechanism and the variety of clinical symptoms of tuberculosis define the disease's natural history. Pulmonary tuberculosis can result in death if you stop taking the drug regularly for up to 6 months. Apart from affecting a person and impacting the sufferer's family, they also have a psychological impact.[2]

In 2018 the number of incidents (new cases) increased, which amounted to 511,873 with a prevalence of 193/100,000 Indonesian population. Indonesia itself is a developing country that is included as a country with a TB disease burden. Indonesia, in 2017, was around 1.02 million cases, with the number reduced to 842,000 cases, which ranked third in TB in the world.[3] The prevalence of TB cases in Malang in 2020, the number of pulmonary TB cases reached 942, with male sufferers totalling 522 people and women 420 people, with a case detection rate of 49.34%.[4]

The clinical signs of pulmonary tuberculosis appear gradually and are nonspecific. A prolonged cough with mucus, pleuritic chest pain, hemoptysis, dyspnea, wheezing, weakness or progressive tiredness, cachexia/weight loss, loss of appetite (leading to anorexia), chills/fever, night sweats, and malaise are some of the symptoms.[5] There is a distinctive sound when percussion is done on the chest. There is a sound on the chest, increased white blood cells dominated by lymphocytes, which in children occurs due to decreased body weight for two months in a row for no apparent reason or even failure to thrive, fever without any evident cause, wheeze or wheeze, cough chronic for three weeks, with or without wheeze, history of direct contact with adult pulmonary tuberculosis patients.[6]

Chest pain in pulmonary tuberculosis arises when the inflammatory infiltrate reaches the pleura, resulting in pleuritis. The part of the lungs most sensitive to pain is the parietal pleura. The pain caused by the site of inflammation is stabbing in nature and can get worse when accompanied by coughing, sneezing, even if the breath is too deep. Chest pain associated with pulmonary conditions may feel sharp, like a stab, not constant or even deaf.[7] Chest pain is when the chest area hurts or feels pain from dull to sharp or stabbing. In certain conditions, pain can also feel like squeezing or burning.[8]

A breathing exercise is designed to strengthen the muscles that act during respiration.[9] Breathing exercises used to reduce chest pain are deep breathing exercises. Deep breathing is an exercise with optimal breathing techniques to improve the function of the accessory muscles of breathing so that you can get deep breaths with a more significant expansion through the chest and abdomen since inspiration so that the volume results can change at any time to be more.[10] Inhale slowly via your nose and exhale through your lips, squeezed together to take a deep breath. Deep breathing techniques that aim to clear the airway of foreign objects contained in the airway can be done at any time. Still, a routine can be implemented by a person with pulmonary tuberculosis who has an impaired airway due to sputum accumulation on the airway is implemented before meals and at bedtime.[11,12]

Based on the discussion above, it can be stated that the deep breathing exercise

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Based on the discussion above, it can be stated that the deep breathing exercise

technique only focuses on breathing. Therefore researchers want to know the effectiveness in reducing chest pain in tuberculosis patients. So the researcher wants to do research by understanding the effect of deep breathing exercises on the chest pain of tuberculosis patients in the Dau District. It is hoped that this research can help tuberculosis patients in the Dau district choose an effective type of exercise to overcome and reduce the level of chest pain in tuberculosis patients.

METHODS

This study used a quasi-experimental research design. Quasi-experimental used the pre-test and post-test two-group designs in which the researcher examines the cause-and-effect relationship between the independent and dependent variables. This research was carried out in March 2023 which was carried out in Dau district. Sampling in this study used total sampling based on predetermined inclusion and exclusion criteria, with a total sample of 25 respondents. Data collection used the numeric rating scale (NRS) to determine the patient's level of chest pain. After that, data processing and analysis were conducted using the *Shapiro-Wilk* and *Wilcoxon* effect tests using the SPSS 20 computer program.

RESULTS

The characteristics of the respondents observed in this study were gender, age, and length of suffering. Table 1 shows that most respondents are of the female sex, as much as 56%. The age that is most susceptible to TB is adults, as much as 40%. The duration of suffering from TB patients is as much as 28%. There was a decrease in chest pain, with an average result of 3.56.

Table 2 shows significant results p=0.000 and α = 0.050, which means that deep breathing exercise affects chest pain in TB patients. In addition, the effect of deep breathing on chest pain in TB patients is quite strong, with p=0.000.

Table 1. Characteristics of TB patient respondents

Characteristics	n	%
Gender		
Male	11	44%
Female	14	56%
Age		
Teenager	6	24%
Mature	10	40%
Elderly	6	24%
Seniors	3	12%
Long Suffered		
1 Month	3	12%
2 Month	4	16%
3 Month	5	20%
4 Month	7	28%
5 Month	6	24%
Chest Pain, mean		
Pre-test	5.12	
Post-test	1.56	

Table 2. The effect of deep breathing exercises on chest pain in TB patients in the Dau district

Variable	n	*p*	α
Pre-test	25	0.000	0.050
Post-test	25	0.000	0.050

DISCUSSION

Mycobacterium tuberculosis is the cause of the chronic infectious disease tuberculosis, which is characterized by necrotic granulation tissue as a reaction to this germ. People with weakened immune systems and those susceptible to the disease are quickly exposed. The main symptom is a chronic cough that produces phlegm for two to three weeks or more, accompanied by other symptoms, including chest pain.[13]

Inflammation from mycobacterium tuberculosis that develops in the lungs and spasms or tension of the diaphragm muscles due to expulsive coughing cause chest pain in TB.[14] Pleuritis, inflammation of the pleura (the lining that covers the lungs), causes chest pain when the inflammatory infiltrate has reached the pleura (lung lining). The pleura that covers the lungs and lines the inside of the lung walls can cause chest pain and make it difficult for the lungs to expand because there is friction between the two thin membranes when the patient inhales or exhales both breaths, and fluid buildup occurs between the membranes.[15]

Deep breathing relaxes skeletal muscles by increasing prostaglandins, which cause blood vessels to widen and increase blood flow to the affected area. The physiology of the autonomic nervous system, a component of the peripheral nervous system that supports homeostasis of the individual's internal environment, is the theoretical basis for reducing pain using relaxation techniques.[16]

The water inhaled or exhaled by the lungs is divided into many categories known as the volume and capacity of the lungs in terms of their physiological function. Tidal volume and critical lung capacity will change when a person breathes deeply, increasing above average. Deep breathing maximizes the muscles used for additional breathing, increasing the amount of atmospheric air that enters the lungs and the amount of surfactant produced, which reduces alveolar surface tension and increases lung compliance.[17]

Breathing exercises aim to produce more controlled and adequate ventilation while minimizing the effort required to breathe. Intense breathing exercises can increase the ability to expand the lungs.[18] Breathing exercises will increase the inspiratory capacity and stimulate the work of the respiratory muscles.[19] The lungs expand during deep breathing exercise thanks to inspiration. In this case, because inspiration is an active process, contraction of the inspiratory muscles increases intrathoracic pressure, which is caused by more muscular contractions of

the diaphragm and external intercostal muscles. Deep breathing exercises will increase ventilation, reduce chest pain, prevent atelectasis, increase respiratory muscle strength, increase chest and thoracic spine mobility, and correct aberrant breathing patterns. Deep breathing is taught to conscious and willing patients.[20,21]

This study has limitations. First, the number of samples was limited even with the total sampling technique. A multicentre study with a larger sample size is needed to verify our results further. Second, this study could not monitor control variables such as the severe level of chest pain. Future researchers are expected to be able to pay more attention to the level of chest pain that occurs in TB patients.

CONCLUSIONS

This study can be concluded that there was a significant effect of deep breathing exercise on the chest pain in TB patients, which deep breathing exercise greatly affects the reduction of chest pain in TB patients.

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CONFLICT OF INTEREST

This study has no conflicts of interest.

ETHICAL CONSIDERATION

Before starting the study, the authors got the samples granted informed permission.

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AUTHORS CONTRIBUTION

ER developed the study design, collected and analyzed data, and compiled manuscripts. NAR, and AY, interpret the data, analyze and compile the manuscript.

REFERENCES

1. Mar'iyah K,, Zulkarnain. Patofisiologi penyakit infeksi tuberkulosis. In Prosiding Seminar Nasional Biologi. 2021; 7(1): 88–92.
2. Van Leth F, Van Der Werf MJ, Borgdorff MW. Prevalence of tuberculous infection and incidence of tuberculosis; a re-assessment of the Styblo rule. Bull World Health Organ. 2008; 86(1): 20–26.
3. Abednego Tangkilisan JR, Langi FLFG, Kalesaran AFC. Angka penemuan kasus tuberkulosis paru di indonesia tahun 2015-2018. Jurnal KESMAS. 2020; 9(5): 1–9.
4. Yulianti TR, Sabila AA, Farha BM, Renhoran CR, Putri CN, Rumaisha D, et al. Pencegahan dan pengendalian tuberkulosis paru. Jurnal Pengabdian Kesehatan Masyarakat: Pengmaskesmas. 2022; 2(1): 68–81.
5. Pai M, Behr MA, Dowdy D, Dheda K, Divangahi M, Boehme CC, et al. Tuberculosis. Nat Rev Dis Primers. 2016; 2: 1–23.
6. Luies L, Preez I du. The echo of pulmonary tuberculosis: Mechanisms of clinical symptoms and other disease-induced systemic complications. Clinical Microbiology Reviews. 2020; 33(4): 1–19.
7. Amiar W, Setiyono E. Efektivitas pemberian teknik pernafasan pursed lips breathing dan posisi semi fowler terhadap peningkatan saturasi oksigen pada pasien TB paru. Indonesian Journal of Nursing Science and Practice. 2020; 3(1): 1–7.
8. Jany B. Pneumologische Ursachen für Thoraxschmerz. Internist (Berl). 2017; 58(1): 22–28.
9. Ilmanisa, Muthiah M, Kesit I, Trisia LA. The effect of additional breathing exercises in postural training on decreasing the hyperkyphosis curve in older people. Physical Therapy Journal of Indonesia. 2023; 4(1): 36–40.
10. Suryarinilsih Y, Netti N, Budi H. Deep breathing and coughing techniques are effective for airway clearance in patients with pulmonary tuberculosis. International Journal of Current Science Research and Review. 2023; 6(4): 2347–2351.
11. Smeltzer SC, Bare BG. Buku ajar keperawatan medikal bedah. Edisi 8. Jakarta: ECG, 2013.
12. Hasaini A. Pengaruh teknik relaksasi napas dalam dan batuk efektif terhadap bersihan jalan napas pada klien dengan TB paru di Ruang Al-Hakim RSUD Ratu Zalecha Martapura Tahun 2018. Dinamika Kesehatan. 2018; 9(2): 240–251.
13. Aida NKK, Masyeni DAPS, Ningrum RK. Karakteristik penderita dengan infeksi tuberkulosis di RSUD Sanjiwani. Aesculapius Medical Journal.| 2022; 2(1): 1–7.
14. Pangestika R, Fadli RK, Alnur RD. Edukasi pencegahan penularan penyakit TB melalui kontak serumah. Jurnal SOLMA. 2019; 8(2): 229–238.
15. Hasibun RA, Hidayah N. Gambaran tingkat pengetahuan, sikap dan tindakan pasien tuberkulosis terhadap kejadian TB paru di Puskesmas Medan Area Selatan. Jurnal Kesehatan. 2019; 12(2): 238–251.
16. Syamsu RF, Faizal N, Kariati S, Darwis MZ, Angraini ASNH. Karakteristik penderita tuberkulosis di Rumah Sakit Ibnu Sina Periode Januari - Desember 2018. Jurnal Medula. 2020; 7(2): 25–44.
17. Dewi Kristini T, Hamidah R. Potensi penularan tuberculosis paru pada anggota keluarga penderita. Jurnal Kesehatan Masyarakat Indonesia. 2020; 15(1): 24–28.
18. Siwi TK, Norlita W. Karakteristik penderita tuberkulosis tahun 2011-2012 di Puskesmas Harapan Raya Pekanbaru. Jurnal Photon. 2015; 5(2): 111–118.
19. Wahyudi DA, Xanda AN, Sukesi N, Puspita L, Wardani PK, Yurlina E, et al. Active cycle of breathing to respiratory rate in patients with lung tuberculosis. International Journal of Pharmaceutical Research. 2021; 13(1): 4776–4784.
20. Syafa'ah I, Yudhawati R. Peran imunitas mukosa terhadap infeksi mycobacterium tuberculosis. Jurnal Respirasi. 2016; 2(2): 61–68.
21. Shen MD, Li YW, Xu LQ, Shi HY, Ni YY, Lin HJ, et al. Role of active cycle of breathing technique for patients with chronic obstructive pulmonary disease: A pragmatic, randomized clinical trial. Int J Nurs Stud. 2021; 117: 1–17.

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