Original Article
doi:10.31674/mjn.2024.v15i03.006

MJN

Motivational Interviewing with Progressive Muscle Relaxation for Anxiety Disorders in Tuberculosis

Uly Agustine[1]*, Shelfi Dwi Retnani Putri Santoso[1], Sri Mugianti[2], Wanto Paju[1]

[1]Nursing Department of Waikabubak, Poltekkes Kemenkes Kupang, East Nusa Tenggara, Indonesia
[2]Nursing Department of Blitar, Poltekkes Kemenkes Malang, East Java, Jawa Timur 66133, Indonesia

**Corresponding Author's Email: agustineuly@gmail.com*

ABSTRACT

Background: Individuals with Tuberculosis (TB) may experience anxiety due to the disease's uncertain treatment, prognosis, and subsequent social judgment. It may affect the patient's motivation to engage in the treatment, boosting its effectiveness and reducing tuberculosis transmission. Interventions are required to help people alleviate their anxiety about tuberculosis. **Objective:** The primary objective of this study is to investigate how motivational interviewing and progressive muscle relaxation impact anxiety levels among individuals with tuberculosis. **Methods:** The study employed a quasi-experimental pretest-posttest control group design. Participants were chosen through convenience sampling based on specific inclusion and exclusion criteria. A total of 60 clients participated, with 30 assigned to the intervention groups and 30 to the control groups. This study used the Zung Anxiety Self-Assessment instrument. An analysis of differences in anxiety used Wilcoxon and Mann-Whitney. **Results:** In the pre-test, the majority of participants had mild anxiety levels; 70% (49.30 ± 8.526) in the intervention groups and 63.3% (45.43± 8.423) in the control groups. In the post-test, there has been a decrease in anxiety levels in the intervention group at 93.3% (30.90 ± 7.572), but anxiety levels remained the same in the control group of 66.7% (43.97±7.346). According to the statistical analysis, the intervention group achieved a *p*-value of 0.000, indicating a substantial variance in anxiety levels before and after the intervention. In contrast, the control group recorded a *p*-value of 0.785, suggesting that there was no significant alteration in anxiety levels before and after the intervention. **Conclusion:** Progressive muscle relaxation can alleviate tension, and motivational interviewing can boost motivation and help clients deal with anxiety triggers. Both interventions can be considered as extra treatments for tuberculosis patients who experience anxiety.

Keywords: Anxiety; Motivational Interviewing; Progressive Muscle Relaxation; Tuberculosis

INTRODUCTION

Tuberculosis is a chronic infectious disease (A.D. & A.O., 2022) and the leading contributor to sickness and fatalities on a global scale (Chandra *et al*., 2019). Pulmonary tuberculosis may have an impact on mental health and disabilities, which leads to poor medication compliance and possibly drug resistance (Gulzar *et al*., 2021). According to a study conducted in Ethiopia, people with tuberculosis who experienced depression had a higher risk of treatment failure and death than those who did not (Ambaw *et al*., 2018). According to numerous studies, pulmonary tuberculosis is associated with higher rates of depression, anxiety, loneliness, and a low quality of life. This affects adherence to tuberculosis treatment (Kastien-Hilka *et al*., 2017).

The WHO report of 2022 revealed 10 million tuberculosis cases worldwide, with 1.5 million deaths due to tuberculosis (WHO, 2022). Indonesia is in second place after India and China (Bahi *et al.*, 2023), with 1.02 million cases of pulmonary tuberculosis (Santoso & Sasmito, 2020). The prevalence of pulmonary tuberculosis in NTT Province in 2020 was 4,795 cases, and 4,798 cases in 2021. This data shows an increase in the number of pulmonary tuberculosis cases (Dinkes Provinsi NTT, 2021). In the present scenario the number of TB cases is increasing faster all over the world (Castillo, Redula, E, & Tipon, 2019).

Anxiety can be triggered by tuberculosis (TB) due to the uncertain treatment and prognosis, as well as

Received: November 28, 2023 Received in revised form: December 1, 2023 Accepted: December 2, 2023

social judgment. It may affect a patient's desire to receive treatment, which may affect the effectiveness of the tuberculosis treatment. Chronic illnesses like tuberculosis not only have physical side effects but also cause mental health issues, decrease treatment adherence, and ultimately contribute to drug resistance. Several studies indicate that motivational interviewing (MI) can be an additional therapy to help patients with anxiety issues (Randall & McNeil, 2017).

There are additional treatment recommendations for anxiety, such as progressive muscle relaxation. Studies on hemodialysis patients with chronic renal failure revealed that progressive muscle relaxation affected levels of anxiety, quality of sleep, and the overall quality of life (Amini *et al.*, 2016). The purpose of progressive muscle relaxation is to diminish or remove the sensation of tension by stretching the muscles and then progressively relaxing them (Essa *et al.*, 2017). By addressing emotional and physical issues, this therapy assists in reducing anxiety. Both interventions are expected to provide optimal results in reducing internal anxiety (Santoso & Sasmito, 2020; Wawo Bulu *et al.*, 2023). In this regard health centre can help older people affected with TB to feel better emotionally by doing group activities like health promotion together (Rohmana *et al*., 2021).

This study aims to determine the effect of motivational interviewing and progressive muscle relaxation (PMR) on anxiety in tuberculosis.

METHODOLOGY

The research, with a quasi-experimental pretest-posttest control group design (Sugiyono & Puspandhani, 2020), was carried out from February 1st to August 2nd 2023. The calculation of the sample size was conducted using PS-Power Sample Size Calculation Software. Convenience sampling was used to choose the sample, and the inclusion criteria were: (1) age 21 – 60 years; (2) tuberculosis patients with a positive BTA test who received treatment for no more than 1-2 months; (3) absence of comorbid conditions; and (4) clients who can hear and understand instructions. The exclusion criteria include: (1) being diagnosed with multidrug-resistant tuberculosis (TB-MDR); (2) experiencing complications; and (3) consuming antidepressants. The total number of respondents obtained was 60 clients in three health centers in the West Sumba Region with high tuberculosis rates, such as Puskesmas Puweri, Puskesmas Wekaro, and Puskesmas Tanarara. The respondent was divided into two groups: the intervention group had 30 clients, and the control group had 30 clients.

The initial research was preceded by a pre-test anxiety score for the intervention group and control group. In the intervention group, the treatment consisted of a 45-minute, twice-weekly session that combined motivational interviewing and progressive muscle relaxation. Each intervention was divided into two sessions. In the first session, the patient received progressive muscle relaxation training for 15 minutes. In the second session, for 30 minutes, the researcher asked about the patient's problems when taking anti-tuberculosis program drugs and then determined the priority issues. Then, motivation and education about tuberculosis were provided (causes, symptoms, the effect of discontinued treatment, correct treatment, and prevention/clean and healthy living behavior). In the control group, there was no treatment, but they still received control from the Puskesmas. After the 24 weeks (six months) following the initial treatment, all groups administered a post-test of anxiety assessment on pulmonary tuberculosis clients.

To determine the anxiety level of tuberculosis patients, researchers used the self-assessment questionnaire for anxiety in Indonesian-speaking pulmonary tuberculosis patients, based on the Zung Anxiety Scale, which has been validated with a Cronbach's alpha value of 0.892 (Dewi *et al.*, 2020).

Statistical tests for the difference in anxiety scores in the intervention group and the control group were analyzed using the Wilcoxon Signed Ranks Test and the Mann-Whitney U Test. The Wilcoxon Signed Ranks test was used to analyze differences in anxiety variables before (pre) and after (post) treatment, both in the control and intervention groups, with a significance level of $\alpha = 0.05$. If $p \leq 0.05$, the research hypothesis (H_0) is rejected. Meanwhile, the Mann-Whitney U test is used to analyze the differences in the anxiety variable between the two groups (the intervention and control groups) with a significance level of $\alpha=0.05$. If $p \leq 0.05$, the research hypothesis (H_0) is rejected.

Ethical Consideration

This research has been ethically tested by STIKes Bahrul Ulum Jombang, Indonesia with number 137/EC/KEPK-BU/I/2023 dated January 27, 2023.

RESULTS

Description of Respondent Characteristic Data

Table 1 : Respondent's Characteristics

Characteristic		Intervention Group		Control Group		Total		*p*-value
		n	%	n	%	n	%	
Gender	Male	16	53.3	17	56.7	33	55.0	0.629
	Female	14	46.7	13	43.3	27	45.0	
Age	<40 years old	7	23.3	9	30.0	16	26.7	0.254
	≥40 years old	23	76.7	21	70.0	44	73.3	
Education	Basic or Junior	17	56.7	13	43.3	30	50.0	0.371
	Senior	3	10.0	2	6.7	5	8.3	
	Higher	10	33.3	15	50.0	25	41.7	

In Table 1, 60 tuberculosis-infected respondents are separated into two groups: 30 respondents of treatment groups and 30 respondents of control groups. The results of the equivalence test $p \geq 0.05$ 0.05, and showed homogeneity in the characteristics of gender, age, and level of education in both groups.

Description of the Anxiety of Pulmonary TB Clients Before and After Motivational Interviewing and Progressive Muscle Relaxation Interventions

To characterize anxiety levels, anxiety scores are classified as follows: no anxiety (score of bellow < 41), mild (between 42 to 55), moderate (between 56 and 70), and severe (a score exceeding 71). The findings are displayed in Table 2.

Table 2 : Distribution of an Anxiety Level in Tuberculosis before and after a Combination of Motivational Interviewing and Progressive Muscle Relaxation Intervention

Group/Anxiety Categories	Pre-Test		Post Test		Wilcoxon test
	f	%	f	%	
Intervention					0.000
No Anxiety	2	6.7	28	93.3	
Mild	21	70.0	1	3.3	
Moderate	5	16.7	1	3.3	
Severe	2	6.7	0	0	
Mean (SD)	49.30 (8.526)		30.90 (7.572)		
Control					0.785
No Anxiety	9	30.0	8	26.7	
Mild	19	63.3	20	66.7	
Moderate	0	0	2	6.7	
Severe	2	6.7	0	0	
Mean (SD)	45.43 (8.423)		43.97 (7.346)		
Mann-Whitney U test	0.228		0.000		

Table 2 shows that a combination of interventions between motivational interviewing and progressive muscle relaxation can reduce anxiety. In the pre-test, 70% of the people had mild anxiety levels, but in the post-test, this percentage increased significantly to 93.3%, indicating a substantial increase in the prevalence of no anxiety levels in the intervention group. In the control group, the highest percentage was in the mild anxiety category in both the pre-test and post-test, which were 63.3% in the pre-test and 66.7% in the post-test. However, if we look at the control group during the pre-test, there were 2 participants experiencing severe anxiety, but in the post-test, there were no participants experiencing severe anxiety as a result of standard intervention at the Puskesmas.

The results p= 0.228, which means that there was no difference in anxiety between the intervention group and the control group before the intervention. Meanwhile, the results of p= 0.000 in the post-test mean that there was a difference in anxiety between the intervention group and the control group after the intervention. The results of the Wilcoxon signed rank test statistic in the intervention group obtained a value of p = 0.000, which means that there was a significant difference in anxiety before and after the intervention. The control group obtained a value of p = 0.785, which means that there was no significant difference in anxiety before and after the intervention.

DISCUSSION

This research shows a significant difference in the intervention group before and after administering motivational interviewing (MI) and PMR therapy on anxiety in tuberculosis patients (p=0.000). Furthermore, observing the mean and standard deviation of anxiety levels indicates changes in the treatment group, from 49.30 (8.526) to 30.90 (7.572). Several factors that may contribute to the difference in anxiety values after MI intervention include the intensive support provided, increased knowledge about the disease, and positive effects after completing the treatment. Providing support to clients through motivation and encouragement, ensuring the availability of medication at home, and acting as an observer during medication intake can have a positive impact on treatment adherence (Cahyawati *et al*., 2023). Knowledge about tuberculosis also influences the level of patient anxiety (Siahaineinia & Sinaga, 2020). During the MI intervention, support and education on tuberculosis were consistently provided to the treatment group. Meanwhile, in the control group, there is a possibility that anxiety levels remained relatively stable throughout the trial. This could be due to the absence of MI intervention or the implementation of a more standard intervention that is less focused on anxiety reduction.

It can assist clients in exploring problems they experience that have the potential to cause health problems. Additionally, motivational interviewing can be defined as a communication method focusing on boosting individual motivation and commitment to make positive changes in a situation of acceptance and affection (Holt *et al*., 2017). Motivational interviewing (MI) interventions are applied as a therapeutic strategy to change behaviors that boost mood (Ponsford *et al*., 2016). Research recommends that motivational interviewing (MI) interventions with CBT can reduce anxiety in patients with severe anxiety disorders (Westra *et al*., 2016). In line with research conducted on heart failure patients, motivational interviewing (MI) has no significant effect on reducing anxiety and depression or improving sleep quality. As motivational interviewing (MI) was only utilized by doctors in the study, this can be used as an evaluation of motivational interviewing (MI) management, perhaps combined with other interventions or the engagement of families and nurses (Rebora *et al.*, 2021). For this reason, the researchers combined the management of motivational interviewing (MI) with progressive muscle training to reduce anxiety levels (Essa *et al*., 2017). It is hoped that the combination of the 2 interventions will provide optimal results in reducing anxiety (Santoso & Sasmito, 2020; Wawo Bulu *et al*., 2023).

The implementation of both interventions was carried out simultaneously, twice a week for four weeks, with each intervention given 45 minutes (Charalambous *et al.,* 2016; Loa, 2016). Progressive muscle intervention is carried out before motivational interviewing (MI). Progressive muscle relaxation makes people feel pleasant emotions such as happiness, peace, enthusiasm, freshness, and calmness, both physically and mentally (Yilmaz & Kapucu, 2017). According to research on cancer surgery patients, relaxing techniques can help clients feel less anxious, thereby becoming a recommended treatment option (Ozhanli & Akyuz, 2022).

After 15 minutes of relaxation, motivational interviewing (MI) can help clients become more motivated to conduct their treatment (Louwagie *et al*., 2014). Research shows (Parwati *et al.*, 2021) that motivational

interviewing (MI) communication can help clients overcome anxiety triggers and treatment obstacles, increasing adherence to tuberculosis treatment. The findings of another study conducted in Malaysia also supported the idea that motivational interviewing, when used consistently in the DOTS program (Mohd *et al*., 2023), can improve the success of TB treatment. By motivating a client, we can boost their motivation and reduce conflict (Herdiman *et al*., 2022).

CONCLUSION

This study shows that there are significant differences before and after motivational interviewing (MI) and progressive muscle intervention on anxiety in patients with tuberculosis. The interventions can be a recommendation for non-pharmacological therapy to reduce anxiety in patients with tuberculosis. It is hoped that the impact of the patient's mental disorder can be minimized so that the treatment program can be completed properly.

Conflict of Interest

The authors declare that they have no competing interests.

ACKNOWLEDGMENT

On this occasion, the researcher would like to thank the parties who helped in the process both morally and materially, including the Ministry of Health of the Republic of Indonesia, Poltekkes Kemenkes Kupang East Nusa Tenggara, the provincial health office of West Sumba and the Puskesmas where the research took place.

REFERENCES

Ambaw, F., Mayston, R., Hanlon, C., Medhin, G., & Alem, A. (2018). Untreated depression and tuberculosis treatment outcomes, quality of life and disability, Ethiopia. *Bulletin of the World Health Organization, 96*(4), 243–255. https://doi.org/10.2471/BLT.17.192658

Amini, E., Goudarzi, I., Masoudi, R., Ahmadi, A., & Momeni, A. (2016). Effect of Progressive Muscle Relaxation and Aerobic Exercise on Anxiety, Sleep Quality, and Fatigue in Patients with Chronic Renal Failure Undergoing Hemodialysis. *In International Journal of Pharmaceutical and Clinical Research, 8*(12). https://core.ac.uk/download/pdf/143840392.pdf

Bahi, S. F., Budhy, T. I., Hidayat, A., Sari, A. V., Januarisca, B. V., Asmaningdiah, M., Moh, Z., Azis, R., Woelansari, E. D., & Suhariyadi, S. (2023). Adenosine Deaminase (ADA) Levels in Suspected Tuberculosis Patients with Results of Interferon-Gamma Results Release Assay (IGRA) Positive and Negative. In *Malaysian Journal of Medicine and Health Sciences, 19* (SUPP3), 101-105. https://medic.upm.edu.my/upload/dokumen/2023030715554221-0901.pdf

Cahyawati, E., Hamid, A. Y. S., Putri, Y. S. E., Susanti, H., & Panjaitan, R. U. (2023). Psikoedukasi Menurunkan Beban Keluarga yang Mengalami Stigma sebagai Klien Tuberkulosis dan Riwayat Putus Obat. *Journal of Telenursing (JOTING), 5*(1), 621–631. https://doi.org/10.31539/joting.v5i1.5679

Castillo, J. M., Redula, E. H., & Tipon, L. (2019). Understanding Tuberculosis Mortality Fluctuation in The Philippines by Artificial Intelligence. *The Malaysian Journal of Nursing (MJN), 10*(3), 3-8. https://doi.org/31674/mjn.2019.v10i03.001

Chandra, M., Rana, P., Chandra, K., & Arora, V. K. (2019). Tuberculosis - Depression syndemic: A public health challenge. *Indian Journal of Tuberculosis, 66*(1), 197–202. https://doi.org/10.1016/j.ijtb.2019.02.007

Charalambous, A., Giannakopoulou, M., Bozas, E., Marcou, Y., Kitsios, P., & Paikousis, L. (2016). Guided imagery and progressive muscle relaxation as a cluster of symptoms management intervention in patients receiving chemotherapy: A randomized control trial. *PLoS ONE, 11*(6). https://doi.org/10.1371/journal.pone.0156911

Dauletbayev, A. D., & Abdullayev, A. O. (2022). Specific Prevention and Diagnosis of Tuberculosis. *Eurasian Journal of Medical and Natural Sciences, 2*(6), 270–276. https://doi.org/https://doi.org/10.5281/zenodo.6646191

Dewi, S. Y., Darmawan Susanto, T., Adisasmita, A. C., Ascobat, P., Burhan, E., Wiwie, M., & Lumbuun, N. (2020). Validity and Reliability of Indonesian Languages Version of Zung Anxiety Self-Assessment Scale Questionnaire for Pulmonary Tuberculosis Patients. In *Indian Journal of Public Health Research & Development, 11*(11), 337–342. https://doi.org/10.37506/ijphrd.v11i11.11398

Essa, R. M., Ismail, N. I. A. A., & Hassan, N. I. (2017). Effect of progressive muscle relaxation technique on stress, anxiety, and depression after hysterectomy. *Journal of Nursing Education and Practice, 7*(7), 77. https://doi.org/10.5430/jnep.v7n7p77

Gulzar, A., Khan, I., Muhammad, A., & Khan, M. N. A. (2021). Prevalence of Depression in Hospitalized Patients of Pulmonary Tuberculosis. *Pakistan Armed Forces Medical Journal, 71*(1), 206–210. https://doi.org/10.51253/pafmj.v71i1.2862

Herdiman Herdiman, N. N. P. C., & Lindayani, L. (2022). The Effectiveness of Motivational Interviewing on HIV Awareness and Prevention Behavior Among Adolescents in Bandung City, Indonesia: A Randomized Controlled Trial. *Malaysian Journal of Medicine and Health Sciences, 18*(SUPP17), 262-269. https://medic.upm.edu.my/upload/dokumen/2023010416524541_2022_0774.pdf

Holt, C., Milgrom, J., & Gemmill, A. W. (2017). Improving help-seeking for postnatal depression and anxiety: a cluster randomised controlled trial of motivational interviewing. *Archives of Women's Mental Health, 20*(6), 791–801. https://doi.org/10.1007/s00737-017-0767-0

Kastien-Hilka, T., Rosenkranz, B., Schwenkglenks, M., Bennett, B. M., & Sinanovic, E. (2017). Association between health-related quality of life and medication adherence in pulmonary tuberculosis in South Africa. *Frontiers in Pharmacology, 8*(919). https://doi.org/10.3389/fphar.2017.00919

Loa, R. F. (2016). Effects of motivational interviewing on the treatment adherence of Tuberculosis patients. *International Journal of Infectious Diseases, 45*, 396–397. https://doi.org/10.1016/j.ijid.2016.02.848

Louwagie, G. M. C., Okuyemi, K. S., & Ayo-Yusuf, O. A. (2014). Efficacy of brief motivational interviewing on smoking cessation at tuberculosis clinics in Tshwane, South Africa: A randomized controlled trial. *Addiction, 109*(11), 1942–1952. https://doi.org/10.1111/add.12671

Mohd, Z. W., Ahmad, S. R., Yaacob, N. A., Mohd Shariff, N., Jaeb, M. Z., & Hussin, Z. (2023). Innovative Integrated Motivational Interviewing for Dual Management in Tuberculosis Patients with Diabetes (MID-DOT) in Malaysia. *Healthcare (Switzerland), 11*(13). https://doi.org/10.3390/healthcare11131929

Ozhanli, Y., & Akyuz, N. (2022). The Effect of Progressive Relaxation Exercise on Physiological Parameters, Pain and Anxiety Levels of Patients Undergoing Colorectal Cancer Surgery: A Randomized Controlled Study. *Journal of Perianesthesia Nursing, 37*(2), 238–246. https://doi.org/10.1016/j.jopan.2021.08.008

Parwati, N. M., Bakta, I. M., Januraga, P. P., & Wirawan, I. M. A. (2021). A health belief model-based motivational interviewing for medication adherence and treatment success in pulmonary tuberculosis patients. *International Journal of Environmental Research and Public Health, 18*(24). https://doi.org/10.3390/ijerph182413238

Ponsford, J., Lee, N. K., Wong, D., McKay, A., Haines, K., Alway, Y., Downing, M., Furtado, C., & O'Donnell, M. L. (2016). Efficacy of motivational interviewing and cognitive behavioral therapy for anxiety and depression symptoms following traumatic brain injury. *Psychological Medicine, 46*(5), 1079–1090. https://doi.org/10.1017/S0033291715002640

Randall, C. L., & McNeil, D. W. (2017). Motivational Interviewing as an Adjunct to Cognitive Behavior Therapy for

Anxiety Disorders: A Critical Review of the Literature. *Cognitive and Behavioral Practice, 24*(3), 296–311. https://doi.org/10.1016/j.cbpra.2016.05.003

Rebora, P., Spedale, V., Occhino, G., Luciani, M., Alvaro, R., Vellone, E., Riegel, B., & Ausili, D. (2021). Effectiveness of motivational interviewing on anxiety, depression, sleep quality and quality of life in heart failure patients: secondary analysis of the MOTIVATE-HF randomized controlled trial. *Quality of Life Research, 30*(7), 1939–1949. https://doi.org/10.1007/s11136-021-02788-3

Rohmana, O., Rochayati, A. S., Hidayat, E., & Sansuwito, T. B. (2021). Comparison of The Effect Group Activity Therapy: Perception Stimulation & Deep Breath Therapy to Elderly Stress in Cirebon City. *The Malaysian Journal of Nursing (MJN), 12*(4), 104-110. https://doi.org/10.31674/mjn.2021.v12i04.014

Santoso, S. D. R. P., & Sasmito, N. B. (2020). Syndicate Group Discussion Combination with Brain Gym on Anxiety in Pulmonary Tuberculosis: Quasy Experiment Study. *Journal Aisyah : Journal Ilmu Kesehatan, 5*(1), 97–102. https://doi.org/10.30604/jika.v5i1.385

Siahaineinia, H. E., & Sinaga, S. N. (2020). Pengaruh Pengetahuan Tentang Tuberculosis (TB) terhadap Tingkat Kecemasan pada Pasien TB Paru di Rumah Sakit TRIA DIPA Jakarta Tahun 2019. *Excellent Midwifery Journal, 3*(1), 26–34. https://doi.org/10.55541/emj.v3i1.121

Sugiyono, & Puspandhani, M. E. (2020). Metode Penelitian Kesehatan (Y. Kumasturyani, Ed.; 1st ed., Vol. 1). ALFABETA, CV.

Wawo Bulu, M., Santoso, S. D. R. P., & Paju, W. (2023). Kombinasi Posisi Semi Fowler, Pursed Lips Breathing, dan Aromaterapi Daun Mint terhadap Sesak Nafas TB Paru. *Journal Well Being, 8*(1), 55–67. https://doi.org/https://doi.org/10.51898/wb.v8i1.196

Westra, H. A., Constantino, M. J., & Antony, M. M. (2016). Integrating motivational interviewing with cognitive-behavioral therapy for severe generalized anxiety disorder: An allegiance-controlled randomized clinical trial. *Journal of Consulting and Clinical Psychology, 84*(9), 768–782. https://doi.org/10.1037/ccp0000098

WHO. (2022). Strategic and Technical Advisory Group for Tuberculosis: Report of the 22nd meeting STAG-TB. http://apps.who.int/bookorders

Yilmaz, C. K., & Kapucu, S. (2017). The Effect of Progressive Relaxation Exercises on Fatigue and Sleep Quality in Individuals with COPD. *Holistic Nursing Practice, 31*(6), 369–377. https://doi.org/10.1097/HNP.0000000000000234