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## Research Article

# The Effect of Progressive Muscle Relaxation on Anxiety in Covid-19 Patients in Bandung

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### Abstract

**Aims:** Hospitalized patients with COVID-19 have been shown to experience high levels of anxiety, according to studies of their mental health, and yet these patients' states of mind have been shown to play a significant role in boosting the immune system during COVID-19 treatment.

**Purpose:** The purpose of this study was to determine the effect of progressive muscle relaxation on anxiety in patients with COVID-19.

**Methods :** The research method was a Quasi Experimental pre-test and post-test design with a control group. The sampling technique was Convenience Sampling with 40 samples which were divided into 20 samples as intervention group and 20 people as control group. Progressive muscle relaxation of 20-30 minutes twice a day for 5 days was only given to the intervention group. A pre-test and post-test using the Fear of COVID-19 Scale (FCV-19S) were implemented to measure anxiety. Data was collected and analyzed using Paired Sample T-test and ANCOVA.

**Results:** showed a statistically significant change in anxiety levels from pre- to post-test for those in the intervention group, but no such change for those in the control group. The significance level for this test is 0.05, so the square root of the mean is 123,578 (F = 115,479) and the standard deviation is 0.000 (p 0.0001). In the intervention group, there is a statistically significant change in sleep quality scores between the pre- and post-test, while in the control group, there is no such change. Its square root is 112.118, its factor is 32.315, and its sign is 0.000 (p 0.05).

**Conclusions:** The conclusion is that anxiety in patients with COVID-19 can be significantly reduced by administering progressive muscle relaxation.

### Keywords

Progressive Muscle , Anxiety, COVID-19

## INTRODUCTION

The first case of COVID-19 was reported in Wuhan, Hubei province, in December 2019, and the virus has since spread to over 190 countries and provinces around the world.

Thus, on March 12, 2020, the World Health Organization declared COVID-19 a global pandemic (1) . As of September 9, 2021, globally, COVID-19 cases reported to WHO were 222,406,582 cases, including 4,592,934 deaths caused by COVID-19 (2).

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As of September 8, 2021, 4,147,365 people in Indonesia had tested positive for COVID-19, 137,782 people had died from the disease, and 3,876,760 people had recovered from it (3). Coronavirus is the etiology of COVID-19 that can cause tissue damage when infection by the virus occurs, such as the onset of pneumonia, severe pneumonia, ARDS, sepsis, to septic shock (2,4). Mental health problems that often occur in COVID-19 patients are anxiety, the prevalence of anxiety in patients diagnosed with COVID-19 is illustrated in 22 studies in a meta-analysis written by Jiawen Deng (5) that the incidence of anxiety in China is 48%. (5), while in Italy it is 33% (6), Ecuador 63% (7) and Iran is 29% (8), the prevalence the combined mild, moderate, and severe anxiety was 29%, 12%, and 6% (5). Meanwhile in Indonesia itself, accessed from the official website of PDSKJI (Association of Indonesian Mental Medicine Specialists) on September 23, 2021, 65% of PDSKJI self-examination users experience anxiety due to COVID-19, 46% of them experience severe anxiety, 33% moderate anxiety, 2% experience mild anxiety, the other 19% showed no symptoms of anxiety.

Behavioral factors are considered as a possible mechanism for immune dysregulation (9). Relationships between the brain, hormones, and the immune system (10). Both psychological and physical stress have been linked to the release of neuropeptides and other inflammatory mediators, both of which can contribute to the onset of the inflammatory response (11). According to one study, COVID-19 infection causes the production of two pro-inflammatory cytokines, IL-1b and IL-6 (12). Additional studies have shown an increase in serum cortisol and the Hospital Anxiety and Depression Scale in COVID-19 infection, which is consistent with the aforementioned research (HADS score). As a result, patients with COVID-19 who suffer from anxiety, depression, and other symptoms may have a reduced immune response and recovery (13). Sleep disturbances and anxiety may therefore

have an indirect impact on the prognosis and outcomes of COVID-19 patients (14). As a result, people with COVID-19 who suffer from mental health problems, anxiety, or poor sleep quality require immediate assistance (15).

To overcome anxiety can be given pharmacological therapy and non-pharmacological therapy. While medication therapy for anxiety and sleep quality, such as benzodiazepine-type sleep-promoting, may help patients with COVID-19 initially, it can lead to respiratory depression and delays in monitoring disease development (16). Another alternative for managing anxiety and sleep quality disorders in COVID-19 patients is non-pharmacological therapy (15). Non-pharmacological therapy consists of cognitive and behavioral therapy which includes: sleep hygiene, sleep restriction or sleep restriction, relaxation therapy or relaxation therapy such as progressive muscle relaxation and stimulus control therapy. Progressive muscle relaxation is a sort of non-pharmacological therapy that has been shown to be effective in reducing anxiety symptoms in patients with the COVID-19 mutation. This therapy does not necessitate any specialized equipment, setting, or duration of treatment (14), while other non-pharmacological therapies do not yet exist. studies that say it is effective in overcoming anxiety problems in COVID-19 patients.

In the field of medicine, progressive muscle relaxation (PMR) refers to a treatment method in which the muscles are progressively and sequentially relaxed. To put it another way: (17). This PMR study explains how it can be used without drugs to improve patients' exercise tolerance, functional capacity, and quality of life. This is accomplished through a series of exercises involving deliberate muscle contraction and relaxation (18).

Giving people progressive muscle relaxation exercises has been shown in multiple studies to improve sleep quality and decrease anxiety (15,19).

## METHODS

A quantitative research approach is used in this study. The research design employed is the Quasy-Experiment Two Group PreTest – PostTest Design. The sample was divided into two groups, the control group and the intervention group, and both groups were

tested (pre-tested) before treatment to determine the condition of the group prior to treatment. The two groups were then tested again after treatment (post-test) to determine the condition of the group after treatment (20). This technique was used to investigate the impact of progressive muscle relaxation on anxiety levels.

## RESULTS

**Table 1.**  
**Description of anxiety levels in the intervention group and control group**

	Intervention		Control	
	Mean ±(SD)	Min- Max	Mean ±(SD)	Min- Max
<b>Anxiety Level</b>				
<i>Pre-test</i>	27.85±3.3	22-32	27.00±3.7	21-32
<i>Post-test</i>	23.70±3.0	19-28	27.25±3.7	21-32

Table 1 describes the level of anxiety in the intervention group with an average pre-test score of 27.85 from a score range of 7-35, and after being given an intervention the level of anxiety became an average of 23.70 from a score range of 7-35. Meanwhile, the average pre-test score in the control group was 27.00, and the post-test average score did not change much, namely 27.53 from a score range of 7-35.

**Table 2.**  
**Differences in anxiety level scores before and after progressive muscle relaxation intervention in the intervention and control groups (n = 40)**

Source	Type III Sum of Square	Df	Mean Square	f	Sig.
<i>Corrected Model</i>	516.857	2	258.429	211.932	0.000
<i>Intercept</i>	0.062	1	0.062	0.051	0.822
<i>Pre-Test</i>	390.832	1	390.832	320.514	0.000
<i>Group</i>	184.588	1	184.588	151.377	0.000 <sup>a</sup>
<i>Error</i>	45.118	37	1.219		
<i>Total</i>	26521.000	40			
<i>Corrected Total</i>	561.975	39			

Table 2 shows the ANCOVA statistical test results, which show that there is a difference in anxiety level scores (sig. = 0.000). Similarly, there is a difference in sleep quality scores with a significance value of 0.000.

## DISCUSSION

Patients with COVID-19 who participate in a progressive muscle relaxation intervention report significant improvements in their anxiety and sleep quality. Several other studies, including one from Turkey (21), the study provided progressive muscle relaxation intervention to 33 experimental groups, and there were 34 respondents as a control group. The State-Trait Anxiety Inventory (STAI) and the Richards-Campbell Sleep Questionnaire (RCSQ) were used to measure participants' anxiety and sleep quality before and after the intervention. Conclusions drawn from statistical analysis of the data show that progressive muscle relaxation is helpful for patients with COVID-19 in lowering anxiety and enhancing the quality of their sleep following the intervention.

25 patients were assigned to the therapeutic group and 26 to the control group in a second research along these lines (14). Participants in this study undertook a 5-day progressive muscle relaxation program following pre-treatment and post-treatment measures. Both anxiety and sleep were measured with standardized instruments: the Spielberger State-Trait Anxiety Scale (STAI) for anxiety and the Sleep State Self-Rating Scale (SRSS) for sleep. The average STAI score was not statistically significant ( $P = 0.730$ ) before the intervention, but it was statistically significant ( $P 0.001$ ) after. Similarly, the mean sleep quality score (SRSS) did not substantially differ between the two groups prior to the intervention, but it did thereafter ( $P 0.001$ ). Progressive muscular relaxation can aid COVID-19 patients by reducing anxiety and enhancing sleep quality.

The third study is a Chinese study that is very similar to this one (15) Before and after the 5-day progressive muscle relaxation intervention, the same instrument was used on the same 39

patients in the experimental group who did not receive the intervention. The patient's anxiety, sleep, and depression were assessed using the Pittsburgh Sleep Quality Index (PSQI), the Generalized Anxiety Disorder 7 (GAD-7), and the Patient Health Questionnaire 9 (PHQ-9). No pre-intervention group-to-group differences were found in PSQI, GAD-7, or PHQ-9 scores ( $P > .05$ ). There were differences in the PSQI, GAD-7, and GABA) after the intervention, all of which play a role in controlling one's emotional and mental well-being. By presenting the stimulus to the brain, we can induce the release of endorphins, which reduce muscle tension and produce a state of physical relaxation (22).

The stress-coping model theory, which explains how people respond to stress, lends more support to the efficacy of progressive muscle relaxation as a therapeutic for anxiety, affective and physiological responses will arise, for example an increase in blood pressure and heart rate. Progressive muscle relaxation can provide double benefits, namely causing more positive individual adaptation in a short time and decreasing anxiety that does not depend on the process of neutralizing stressors (23).

## CONCLUSION

After progressive muscle relaxation was administered to COVID-19 patients, the average anxiety level score decreased from 27.85 (SD = 3.2) to 23.70 (SD = 3.0), with a p-value of 0.000. This represents a significant improvement in anxiety levels compared to the control group's average score of 27.85 (SD = 3.2).

Although there was a statistically significant difference between pre- and post-intervention scores in the intervention group (27.25 vs. 27.00,  $p = 0.083$ ), no such difference existed between pre- and post-intervention scores in the control group (27.00 vs. 27.25,  $p = 0.508$ ).

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