Effectiveness Of Progressive Muscle Relaxation and Deep Breathing based on Internet method in facing Student anxiety during Covid-19

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Abstract

Introduction: The pandemic effect of coronavirus continues to grow throughout the world. This also happened in Indonesia marked by the increasing number of cases of Covid-19 to date. This also happens in Indonesia, which is marked by the increasing number of Covid-19 cases to date and it cannot be predicted when it will be resolved. This condition brings many health and emotional symptoms, one of which is shown by the increasing anxiety symptoms in students. Government policies that prohibit school activities and travel outside the city or hometown affect the increasing number of anxiety cases. This makes conditions even more uncertain considering anxiety is one of the factors that can trigger stress that affects the body's metabolic performance and mental health, thus making a person vulnerable to Covid-19 exposure. One of the interventions used to reduce anxiety is the method of progressive muscle relaxation and deep breathing. Considering that during the Pandemic Covid-19 period it was required to implement activities that were to maintain a safe distance (physical distancing), therefore the intervention was carried out using an online platform based on the internet.

Objective: This study aims to determine the effectiveness of progressive muscle relaxation and breathing using an internet-based intervention method on anxiety levels in students.

Method: This research is a quantitative descriptive and uses a quasi-experimental approach design with pretest-posttest without a control group. The sampling method was purposive sampling implemented to students at the Faculty of Sport Science, Yogyakarta State University while ordinal pairing was carried out for data distribution. The analysis used was paired sample t-test with data analysis techniques using paired sample t-test through the SPSS 25 program with a significance level of 95% (α = 0.05).

Results: The results showed that progressive muscle relaxation and deep breathing techniques proved to be effective in reducing anxiety in students facing the covid-19 pandemic (p-value = 0.000; α 0.05), which means the hypothesis was accepted. Internet-based progressive muscle relaxation and deep breathing exercises have proven to be effective in reducing student anxiety in the face of the Covid-19 pandemic.

Keywords: Progressive muscle relaxation, deep breathing, anxiety, covid-19, internet


INTRODUCTION

The Covid-19 virus pandemic continues to be faced by the world today and has an impact on 213 countries affected by the spread of the coronavirus this has resulted in the impact of high pressure and anxiety, including in the education sector, especially students who are currently studying at various universities. The impact of the Covid-19 case continues to increase from time to time so that the government makes policies by independently working from home (WFH) activities. Since the situation did not progressively improve, it had a more impact on the mental health...
of students who had to carry out WFH activities continuously, especially in prolonged boredom and anxiety disorders. A public health study conducted by the Faculty of Medicine, Padjajaran University (UNPAD), and declare that a 47% increase in cases of depression experienced by students was due to the work from home policy. Depressive symptoms are serious disorders that inhibit brain activity, not just feeling gloomy or sad for a few days, but are followed by symptoms of changes in sleep patterns, diet, weight changes, concentration problems, anhedonia or loss of interest, fatigue, feelings of dropout hopeless, to suicidal thoughts (1). Besides, several cases of anxiety have also been recorded to have increased to date. Anxiety occurs as a result of a threat to one's self which is fundamental to an individual's existence. Anxiety is a manifestation of various mixed emotional processes that occur when people are experiencing emotional distress and inner conflict or conflict (2). The stimulus to stress and anxiety involves activation of the sympathetic nervous system and the secretion of various hormones and peptides, including the hypothalamic-pituitary-adrenal (HPA) axis, the endogenous opioid system, vasopressin arginine, and oxytocin (3). Sympathetic nervous reactions become increased due to stress stimuli/anxiety stimulates HPA. Activation of the HPA axis begins with the release of corticotropin-releasing hormone (CRH) from the hypothalamic paraventricular nucleus into the hypothalamic-pituitary portal bloodstream, which has the function of stimulating the release of adrenocorticotropic hormone (ACTH) from the anterior pituitary, and the secretions of arginine-vasopressin (AVP) from the posterior or pituitary gland (4). Some of the symptoms of anxiety that arise include symptoms that affect psychologically such as anxiety, disturbed concentration, irritability, feeling of danger signs, insomnia, decreased libido and irritability (5) and also symptoms that affect physical conditions such as making heart palpitations, sweating, feeling shortness of breath, sleep disturbances, fatigue, frequent urination, and dry mouth (6). An effective way to manage symptoms of anxiety or stress is through relaxation techniques (7)(8). Progressive muscle relaxation (9) and deep breathing exercises (10) are useful relaxation techniques for reducing anxiety, muscle contraction, and facilitating sleep (11). The technique of progressive muscle relaxation and deep breathing is a process that uses the power of the mind by moving the body to heal itself and maintain health or relax through communication in the body involving all senses including touch, smell, sight, and hearing (12). The level of anxiety felt by students during the Covid19 case has increased along with the uncertainty of when this pandemic will end and how to deal with and fight this virus. The anxiety that is not handled properly can cause stimulation of the cerebral cortex which can then stimulate a feeling of wanting to vomit, so there is a high probability that there will be an increase in complaints of nausea and vomiting due to excessive anxiety (13).

The anxiety experienced by students in the COVID-19 pandemic requires psychological support to help overcome anxiety status, reduce anxiety, and strengthen their psychological status (14). Several types of therapy are known to help reduce anxiety levels, one of which is relaxation therapy with the Progressive Muscle Relaxation (PMR) method (15). This method is a therapeutic model through muscle relaxation procedures, in which patients are trained to consciously control physical and psychological activities, stabilize emotions, and overcome anxiety symptoms (11). Progressive Muscle Relaxation (PMR) exercise therapy is a therapy that focuses on maintaining a deeply relaxing state that involves contracting and relaxing various muscle groups from the legs upward or the head downward. In this way, one realizes where the muscles are and this will increase awareness of the response of the body's muscles to stress or tension (16)(17). Progressive muscle relaxation and deep breathing exercises help combat rigid, automatic thoughts and despair, creating a bridge between the mind and body of Imagination, connecting perceptions, emotions, and psychological, physiological, and behavioral responses (9). The deep breathing technique is by inhaling air deep into the lungs and exhaled when the diaphragm contracts and expands. By increasing awareness about breathing patterns and turning to abdominal breathing, it can reduce the muscle tension and anxiety that comes with stress-related symptoms or thoughts (18). This deep breathing technique will provide more oxygen resulting in the heart being pumped more slowly and is one of the main ways to deal with stress and anxiety (12). The purpose of this study was to describe the effectiveness of progressive muscle relaxation and deep breathing on the anxiety levels of students facing the Covid-19 pandemic.
METHOD

The method of study was a quasi-experimental research with one group pre-test and post-test design. The sample was taken with a purposive method based on the highest value of anxiety during the covid-19 situation and amounted to twenty sports student’s who taking sport psychology subject members at the faculty of sports science, state university of Yogyakarta. The following table describes the flow-chart of research.

Table 1. The research design

<table>
<thead>
<tr>
<th>Remarks</th>
<th>S</th>
<th>G1</th>
<th>X1</th>
<th>P1</th>
<th>G2</th>
<th>X2</th>
<th>P2</th>
</tr>
</thead>
</table>

A structured pre-test was implemented to measure the level of anxiety accomplished with the anxiety scale of HARS (6). The intervention begins with the implementation of 6 times progressive muscle relaxation to group-1 as well as 6 times of deep breathing training to group-2 through the internet-based method of google-meet, completed with follow-up for further step and post-test was executed with structured post-test of anxiety level. The intervention stage was designed by following progressively stages such (a) formation, (b) transition, (c) implementation, and (d) termination stage. Evaluation is carried out at each stage to provide recommendations for proceeding to the next stage. The analysis includes validity and reliability tests, as well as the analysis used to see the effectiveness of progressive muscle relaxation and deep breathing exercises on anxiety using the paired sample t-test.

RESULT

Comparative anxiety results before and after performing progressive muscle relaxation on students who experience anxiety in the Covid-19 Pandemic can be seen in the following table.

Table 2. The value of anxiety level before and after the intervention

<table>
<thead>
<tr>
<th>Progressive muscle relaxation</th>
<th>Mean</th>
<th>SD</th>
<th>Min – Max</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>24.33</td>
<td>4.555</td>
<td>13 – 30</td>
<td>0.000</td>
</tr>
<tr>
<td>Post-test</td>
<td>14.33</td>
<td>2.236</td>
<td>11 – 18</td>
<td></td>
</tr>
</tbody>
</table>

P* paired test result

Based on this table, it can be concluded that the lowest score of anxiety for students who experience anxiety due to the covid-19 situation shows the number 13 and the highest score is at 30 before doing Progressive Muscle Relaxation with a mean of 24.33 and a deviation of 4.555. This score changed after getting the intervention with the lowest anxiety score of 11 and for the highest of 18, with an average value of 14.33 and a deviation value of 2.236. The Standard Deviation value before doing Progressive Muscle Relaxation shows the number 4.555 and when the number is 2.236 with a value of p = 0.000, this shows that after the paired t-test is carried out, the value of p = 0.000.
(p <0.05) means that there is a significant difference between student anxiety before doing Progressive Muscle Relaxation and anxiety after doing Progressive Muscle Relaxation. To see the results of the comparison of anxiety before and after being given intervention, it can be seen in the following table.

### Table 3. Comparative Anxiety Test Results before and after deep breathing

<table>
<thead>
<tr>
<th></th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>23.67</td>
<td>16.11</td>
</tr>
<tr>
<td>SD</td>
<td>5.099</td>
<td>3.655</td>
</tr>
<tr>
<td>Min –Max</td>
<td>17-32</td>
<td>22-22</td>
</tr>
<tr>
<td>P*</td>
<td>0.000</td>
<td>0.231</td>
</tr>
</tbody>
</table>

*P paired result test

Based on the table above, it shows that the anxiety score before doing deep breathing in students who experience anxiety in the heavy category shows a score of 32 with a mean of 23.67. Meanwhile, the score of anxiety after being given deep breathing decreased to a moderate category with a score of 22. The mean value in the above results shows the number 16.11, with a value of p = 0.000 which implies that after the paired t-test was carried out, the value of p = 0.000 (p <0.05) was obtained. This states that there is a significant difference between student anxiety before doing deep breathing and after doing deep breathing. For the comparison test results of anxiety before and after doing Progressive Muscle Relaxation and Deep Breathing on students who experience anxiety due to the Covid-19 Pandemic, it can be seen in the following table explanation.

### Table 4. The results of anxiety level before and after the intervention

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>P*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progressive Muscle Relaxation</td>
<td>0.667</td>
<td>2.279</td>
<td>0.774</td>
</tr>
<tr>
<td>Deep Breathing</td>
<td>-1,77778</td>
<td>1,42833</td>
<td>0.231</td>
</tr>
</tbody>
</table>

*P* Independent t-test

Based on the table above, it shows that when the comparison test was carried out using the independent t-test, the mean pretest value was 0.667 and the post-test was -177778. For the SD value in the pre-test, it was obtained 2.279 with a p-value of 0.074, while for the post-test results it was 0.231 with a deviation value of 1.42833. The results of statistical tests using paired t-test showed that both Progressive Muscle Relaxation and Deep Breathing had the same significant value, namely (p = 0.000 <0.005). So it can be said that there is an effect of Progressive Muscle Relaxation and Deep Breathing on changes in anxiety levels in students, and it is confirmed by the value of the significance level which shows a number (p = 0.000 <0.05). Likewise, for the comparison test results using the independent T-test to determine the comparison of Progressive Muscle Relaxation and Deep Breathing, a significant value was obtained in the pre-test Progressive Muscle Relaxation and Deep Breathing of p = 0.774 or p>0.05, and the value of p = 0.231 in the post-test. It can be interpreted that there is a significant value meaning that there is no significant difference between Progressive Muscle Relaxation and Deep Breathing. In other words, these two methods have the same effective effect on reducing student anxiety. This means that the hypothesis is accepted, namely Progressive Muscle Relaxation and Deep Breathing in being effective against changes in student anxiety levels in the Covid-19 pandemic. If you look at the percentage of Progressive Muscle Relaxation and Deep Breathing, it means that both of these relaxations are equally effective at reducing anxiety, but when viewed from the anxiety score Progressive Muscle Relaxation is more effective at reducing anxiety.

**DISCUSSION**

Relaxation methods both Progressive Muscle Relaxation and Deep Breathing can inhibit the increase in sympathetic nerves so that the hormone that causes body dysregulation can be reduced (11). The parasympathetic nervous...
system, which has the opposite function of the sympathetic nerves, will slow down or weaken the work of the internal organs of the body. As a result, there is a decrease in heart rate, breathing rhythm, blood pressure, muscle tension, metabolic rate, and the production of stress-causing hormones (19). As the levels of stress-causing hormones decrease, the whole body begins to function at a healthier level with more energy for healing, restoration, and rejuvenation (20). Some literature explains that progressive relaxation exercises are significantly proven to be one of the muscle relaxation techniques that have been proven in therapy programs for muscle tension to be able to overcome complaints of anxiety, insomnia, fatigue, muscle cramps, neck and back pain, high blood pressure, mild phobia and stuttering (21).

The same opinion also states that progressive relaxation techniques can be used to carry out psychological problems so that the relaxation produced by progressive muscle relaxation techniques can be useful for reducing anxiety. The results of this study also support several opinions which state that deep breathing relaxation is effective in reducing anxiety levels in labor mothers because oxygen supplies are then flowed through the blood throughout the body, thereby accelerating the intracellular respiration process (22)(23). The conclusion of this study underlines that breathing can be a relaxation technique for managing stress and headaches. The main key is to focus on relieving tension by breathing through the diaphragm, filling the stomach with oxygen-rich air (24). Additionally, deep breathing can help reduce the severity and frequency of stress-related tension headaches, slow heart rate, lower blood pressure, and reduce fatigue (25).

Based on this, it is expected that students can do Progressive Muscle Relaxation and Deep Breathing exercises repeatedly and continuously when students feel anxious, insomnia, or feel a muscle tension. Progressive Muscle Relaxation and Deep Breathing have the same level of effectiveness in reducing anxiety, but when viewed from the anxiety score Progressive Muscle Relaxation is more effective at reducing anxiety. Progressive Muscle Relaxation and Deep Breathing Exercises are recommended as exercises to reduce anxiety symptoms that are easy to do on your own.

REFERENCES.


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