Effectiveness of Classical Music Therapy Intervention on Stress among Students in Preparing Their Thesis at School of Nursing, Diponegoro University, Semarang, Indonesia

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Abstract

This study aimed to determine differences of stress levels before and after music therapy among student at the final years who was preparing their thesis at School of Nursing, Diponegoro University, Semarang, Indonesia. This study involved 31 respondents recruited using purposive sampling technique. The study applied one group pre test-post test experimental design. The data was collected before and after therapy using the DASS 42 Instrument developed by Lovibond and Lovibond (1995). Wilcoxon Match Pairs Test was employed to analyze the data. The result showed the differences of stress levels among respondents before and after the therapy was performed for them. The intervention was recommended to alleviate the stress level among college students. The nurses and the educational institutions were expected to include the intervention in their programs addressing the college students.

Keywords: Classical music therapy, Stress levels, college students

I. Introduction

A. Background of The Study

Stress is a condition of physical and psychological due to the unwanted or exaggerating demands of the self and the environment. In other words, a person is considered to have stress when he experiences a state of inner pressure due to the demands coming from within himself and the environment [1]. The person suffering from stress usually experience psychological problems, physical, social and caused due. Each person responds differently to stress. This condition results negative and positive impacts on individuals who experience stress. Negative impact of stress is called distress and positive impact of stress is called eustress [2]. The differences of stress effects on the individual were caused by the various characteristics of each individual. These characteristics determine the individual response to the stimulus as a source of stress. Therefore, the individual responses vary to each stimulus [1,3].

Hardjana stated that stress is caused by thoughts, emotions, and behaviors. Individuals suffered from stress are most likely to have malfunction mind, like the chaos of thoughts that cause difficulty in concentration and difficulty in remembering [3]. The emotional disorder that is often experienced by individuals who stress the emotional instability that causes irritability. One form of disturbed behavior by individuals experiencing that stress is an increase in aggressive behavior at the individual [2]. Stress has negative impacts on health, because stress can decrease individuals immune. Individuals who experience stress generally experience a decrease in immunity that would lead to susceptibility to diseases. In the time of stress there is a physical system changes in the body of individuals that lead to the emergence of a disease. Diseases caused by stress include high blood pressure, heart disease, chronic headache, gastritis, ulcers, asthma and cancer. Stress could also bring a sense of sadness (depression). Stress could be influenced by many factors [1,2].

Hurrelman & Losel in 1990 explaining that stress occurs because of external factors and internal factors. The common external factors are the number of developmental tasks that people face daily in both groups of peers, family, school, or work. A complex demand of life could cause persons to experience conflicts which lead to stress [3]. Stress could happen to anyone, including students [4].

The common problems faced by students during preparing their thesis were inadequate language and academic skills, as well as the lack of student interest in research [5]. Their failure was also caused by the difficulty in finding thesis titles, the difficulty of searching the literature and reading materials, limited funds, and their anxiety in consulting with the lecturers. If the students failed to cope adaptively to those problems, they would suffer from stress [6].
Stress experiencing by students during their thesis work could bring positive and negative impacts. One of the factors influencing the impact of stress is individual characteristics [1]. Misra and McKean (2000) revealed the negative impact of stress on college students at the University of Midwestern America. They implied that stress could lead individuals to experience anxiety, chaos time management and leisure satisfaction [1]. In the face of the factors that cause stress needed some method to deal with stress [7].

There are many methods for coping with stress such as pharmacological approaches, behavioral, cognitive, meditation, hypnosis, music and music [2]. Music can influence the overall physical and psychological. Psychologically, the music can make a person become more relaxed, reduce stress, create a sense of security and peace, let the feeling of joy and sadness, and helps release the pain end [7].

Music is the sound coming out of the human soul, able to express emotion or passion is far more up than the word - this word could not be bargain [8]. Music has element - the element in the form: rhythm, rhythm tone, melody, timbre, tempo, pitch, and dynamics that can stimulate a person to express, create a social interaction with a sense of fun [9].

Music therapy performed in the College of Notre Dame, Belmont, California uses the sound stimulus (sound, music) to determine the impact of noise stress and relax the conditions experienced by a person, now it is global [9]. However, the application of music therapy is still rare to find, especially in nursing. Music therapy can have a positive impact to cope with stress. Music therapy is a technique that is easy to use and affordable, but the effect is to show how big and important role in influencing the sound stimulus or condition of relaxed tension in a person, because it can stimulate endorphine spending and serotonin, which is a kind and also the body's natural morphine metanonin. The third substance is an intermediate good for the brain so that we can feel more relaxed on the body of someone who is experiencing stress [10].

The application of music therapy for stress reduction are still rare in Indonesia, especially in the field of nursing. Research conducted by the Regina and Prabowo in 2007 regarding meta tritment music to reduce stress to the method of listening to music on the students, the results indicate a significant difference to the stress before and after treatment, and the results showed that music therapy can reduce the student level of stress [11,12].

B. The Purpose of Study

This study aimed to determine the effectiveness of therapeutic interventions classical music to students of PSIK UNDIP Semarang during writing their thesis.

C. The Benefits of the Study

This study provided additional information about the effectiveness of therapeutic interventions using classical music for students of PSIK UNDIP Semarang during writing their thesis. Such information is expected to be considered as an input for them in using music therapy. In addition, this study could be used as a reference for further research. The research informed patients about stress (students and not students), stress management and an easy, inexpensive, safe and effective method to reduce stress with music therapy.

II. The Method of the Study

The study applied one group pre test-post test experimental design. The population of this study was all graduate students who suffered from and was working on thesis writing in PSIK UNDIP Semarang, which consists of 105 regular students of class 2008. This study used a systematic random sampling in a heterogeneous population of each sub-population. This sampling technique is considered as a random sampling. The study was conducted at the PSIK UNDIP Semarang from November to December 2011.

The instrument of this study was a questionnaire that consisted of a number of questions to obtain data or information required from respondents. The questionnaire was created by the researcher by developing the existing theories for measuring the stress levels of students who are writing his thesis. This research used the questionnaire of DASS (Depression Anxiety Stress Scale), developed by Lovibond and Lovibond in 1995 [14].

DASS tests were also often used in studies conducted in Indonesia such as a study conducted by Irma Rahmawati, Hartiah Haroen, Neti Junianti (2008) to measure the level of stress among adolescents in an orphanage in Sumedang. Damanik (2011) also measured the level of depression, anxiety, and stress among the victims of the earthquake in
Yogyakarta. This study has prompted researchers to use the same research instrument. Damanik (2011) tested the validity by using the internal validity of the technique and found 41 valid items and one invalid item [15,16].

The internal consistency test of reliability used the DASS test instrument and resulted a reliable test (α = 0.9483). The Cronbach's alpha values showed the score of 0.91 on measuring depression, the score of 0.84 in measuring anxiety, and the score of 0.90 in measuring stress. The average value for each scale is 6.34 and 6.97 for depression, 4.7 and 4.91 for anxiety, and 10.11 and 7.91 to stress. DASS showed eligible deviations of 0.9 from standard threshold to be used in a variety of research [14,15,16].

This study also used the MP3 player (MPEG (Motion Pictures Expert Group) Audio layer) along with the Sony brand CD Anti Stress relaxation therapy volume 2 produced by PT. Indo Semar Kings Way Records which was published under license from International Star Search Group. The music used is music Piano Sonata in A Major K331 (Rondo Turca Alle) by Wolfgang Amadeus Mozart with a moderate is 50 db and 6 beats/sec with a frequency (4-8 Hz) in waves theta for 1 hour. This music was used in the research conducted by Sam Eddyanto in 2008 that tested the validity and reliability [17,18,19].

Once the questionnaire as a measure of the validity and reliability tested so it does not need to be measured because the measurement has been done before

### III. Results

Table 4.1

The Level of Stress before Music Therapy was Performed for the Student during Writing their thesis at PSIK UNDIP Semarang in November-December 2011

<table>
<thead>
<tr>
<th>No</th>
<th>Level of stress</th>
<th>f</th>
<th>%</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Severe Stress</td>
<td>8</td>
<td>26%</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>2</td>
<td>Mild Stress</td>
<td>8</td>
<td>26%</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>3</td>
<td>Moderate Stress</td>
<td>15</td>
<td>48%</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>31</td>
<td>100%</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
</tbody>
</table>

The Level of Stress after Music Therapy was Performed for the Student during Writing their thesis at PSIK UNDIP Semarang in November-December 2011

<table>
<thead>
<tr>
<th>No</th>
<th>Level of stress</th>
<th>f</th>
<th>%</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Severe Stress</td>
<td>2</td>
<td>7</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>2</td>
<td>Normal Stress</td>
<td>1</td>
<td>3</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>3</td>
<td>Mild Stress</td>
<td>8</td>
<td>26</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>4</td>
<td>Moderate Stress</td>
<td>10</td>
<td>32</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>31</td>
<td>100%</td>
<td>22.48</td>
<td>4.836</td>
<td>15</td>
<td>33</td>
</tr>
</tbody>
</table>

The Comparison of the mean level of stress before and after therapy Classical music at the stage of preparation of thesis students in PSIK UNDIP Semarang Month December 2011

<table>
<thead>
<tr>
<th>Cognitive</th>
<th>N</th>
<th>Mean</th>
<th>Std Dev</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the intervention</td>
<td>31</td>
<td>22.48</td>
<td>4.836</td>
<td></td>
</tr>
<tr>
<td>After the intervention</td>
<td>31</td>
<td>16.81</td>
<td>5.677</td>
<td>0.000</td>
</tr>
</tbody>
</table>

IV. Discussion

The results of this research showed that the students had mild stress levels, moderate stress levels and severe stress levels. One purpose of music therapy is to reduce stress by lowering ACTH (stress hormone). Before being given music therapy, students seemed tense, anxious, sad, and dispirited. However, after a given classical music therapy students look more calm, relaxed, happy and excited. Music therapy should be conducted in a flexible customized condition[20].

One characteristic of student was doing activities together in a group. Peer groups become so meaningful and very influential in social life. Music therapy which was conducted in this research was classical music therapy. The students listened to music
therapy. Listening to music makes them feel the vibrations of the music surrounding them [20].

Table 4.1 and Table 4.3 showed the student stress levels before and after treatment of classical music. Based on the scores before the given music therapy, 8 respondents (26%) experienced mild stress, 15 respondents (48%) stress was, and 8 respondents (26%) of severe stress.

While music therapy is given after a decline in stress levels of respondents, which is carried out after the music therapy, most of the students as many as 2 people (7%) experienced severe stress, 10 people (32%) experienced stress levels are, as many as 8 people (26%) experienced mild stress levels, and 11 people (35%) to the level of normal scores.

The reduction in stress levels is evidenced by the Wilcoxon test match pairs test. Based on differences in the level of stress test before and after music therapy carried out the calculation results obtained with the Sig. rejection of Ho. In other words, there were significant differences between levels of stress before and after therapy performed classical music on the student who is writing his thesis on PSI K Undip Semarang. Reduction in stress levels that occur in the student's thesis in PSIK Undip Semarang, due to the provision of music therapy can reduce the adrenocorticotropic hormone (ACTH) which is a hormone stress [20].

In addition, music can also bring someone from the Beta brain state (awake) to the Alpha state (meditative) so as to make a person more relaxed. Through music as well, one can release pent-up emotions and unpleasant memories so that it can be a very effective to make the body relax as the body, emotions, and spirit as issued sighs of relief. Music that can trigger strong feelings and out of the body such as removing toxins from the wound [21].

Through music also one can try to find internal harmony (inner harmony) by influencing mood, thoughts, emotions and behavior. It was felt necessary, because the presence of harmony in a person, it will be easier to cope with stress, tension, pain, and a variety of disorders or negative emotions they experienced. Music has the potential for propagation; resonance listener with feelings from negative to positive change and improve the condition of excitement and tranquility [22].

The results of this study are inseparable from the concept that music is therapeutic means to cure. Music generates rhythmic stimulation that was subsequently arrested and processed through the auditory organ in the body's nervous system and glands in the brain which then reorganize the interpretation of the sound into the listener's internal rhythm. This internal rhythm affects human metabolism by improving the process of metabolism. With a better metabolism, the body will be able to build a better immune system, and with a better immune system of the body becomes more resilient against possible infections [9].

Most of the physiological changes occurred due to the activity of two neuroendocrine systems that are controlled by the hypothalamus, namely the sympathetic and adrenal cortical system. The hypothalamus is also known as stress centers of the brain due to its dual function in an emergency. His first function is to activate the sympathetic branch and the autonomic nervous system. Conduct nerve impulses to the hypothalamic nuclei in the brainstem that controls the autonomic nervous system function. [23].

The sympathetic system also stimulates the adrenal medulla to release the hormone epinephrine (adrenaline) and norepinephrine into the blood vessels, so that the impact increases heart rate and blood pressure, and norepinephrine indirectly through its action on the pituitary gland releases sugar from the liver. Adrenocorticotropic hormone (ACTH) stimulates the outer layer of the adrenal gland (adrenal cortex), which causes the release of hormones (the main one is cortisol) that regulate glucose and certain mineral [23].

The high level of stress levels would reduce the body's immune system. Therefore one should always be aware himself of the conditions of excessive stress. One of the benefits of music as therapy is self-mastery is the ability to control himself. Music contains
energy vibrations, these vibrations also activate cells in a person, so that the active cells of the immune system of a person more likely to be active and increased functionality. In addition, music can enhance serotonin and growth hormone as well as lowering the hormone ACTH (stress hormone) [9].

Nurses as one of the team contribute to the health promotion and preventive efforts to prevent stress-related disorders that can ultimately improve the client's life of individuals, groups, and community physical, psychological, social, and spiritual. They should be aware of their needs, in this case is the psychological need to create quality human resources in the future.

V. Conclusion

Analysis of data obtained contained 26% of students experiencing severe stress, 26% of students mild stress, and 48% of students are experiencing stress. Based on the magnitude of the percentage it can be concluded most of the students PSIK UNDIP is currently writing his thesis under stress.

PSIK UNDIP student who is working on their thesis that after getting the Classical Music therapy has decreased the stress level, as much as 7% of students experiencing mild stress, 35% of students to be normal, 26% of students experiencing mild stress and 32% of students are experiencing stress. Based on the large percentage of it can be concluded that after treatment of classical music student stress levels become normal.

Analysis of data to test hypotheses can also be seen from the significance of test results match pairs Wilcoxon test is 0.000 whose value is smaller than the standard error (α) with a significance of 0.05 or 95%. It can be concluded that the hypothesis of the effectiveness of classical music therapy intervention on reducing stress levels in students PSIK Undip accepted. Where to see the numbers in terms of probability when probabilities> 0.05 ha ho accepted and rejected, while the score of probability <0.05 rejected Ho and accepted H1.

The conclusions of this study provide input for the nursing profession to optimize the implementation of music therapy for individuals who are experiencing stress. They are expected to apply music therapy as one of the interventions for stress management and counseling services are supported by integrated so as to optimize the results obtained from the intervention of music therapy for stress management. In addition, they are also expected to disseminate the results of this research to the public so that people know the benefits of music to cope with stress. For further research, it is recommended to conduct further research on the effects of music therapy on stress levels of students using different study designs, for example by using a control group. Similar studies can also be done in different research areas by comparing the individual music therapy and music therapy in the group. Every nurse need to be aware of client’s needs.

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