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The Effect of Classical Music Therapy on Sleep Disorders of Children Hospitalized at Sakinah Islamic Hospital Mojokerto Regency



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Abstract

The general response that occurs when hospitalized children included regression, anxiety separation, apathy, fear, and sleep disorders. One method for improving sleep was music therapy. This research aimed to prove the effect of classical music therapy on sleep disorders at children who have experienced hospitalization at Sakinah Islamic Hospital, Mojokerto Regency. This research design was pre-experimental with one group pretest-post test design approach. The population at this research were all children who experienced hospitalization at Sakinah Islamic Hospital at Mojokerto Regency on February 26th-March 21th 2019 as many as 43 children. The sampling technique of this research was purposive sampling. The sample size that met the research criteria were 30 children. The research instrument used SOP music therapy and questionnaires. The results of this research suggested that before being given music therapy almost all respondents had lacked sleep needs as many as 23 respondents (76.7%), and after being given music therapy almost entirely had equal sleep needs as many as 26 respondents (86.7%). Wilcoxon Signed Rank Test suggested that p value = 0,000 or $< \alpha$ (0,05), which meant that there was an effect of music therapy on sleep disorders at children who have been hospitalized at Sakinah Islamic Hospital Mojokerto Regency. Music therapy would provide a relaxing effect where when children like music would stimulate endorphins to provide a sense of calm and easier to sleep.

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INTRODUCTION

Pain is an unpleasant experience for children, often sick and hospitalization is a major crisis that must be faced by children. Illness and hospitalization are the main crises for children and families. As a result, the client will give reactions to the crisis he experienced (Nursalam et al, 2013). The general response that occurs in hospitalized children includes regression, anxiety separation, apathy, fear, and sleep disturbances (Wong, 2012). Stressor stress causes children to experience stress, physiologically stress means an increase in the hormone cortisol. High cortisol disrupts the neurotransmitter system that regulates sleep and causes disturbances in sleep patterns (Riley, 2016).

The higher the cortisol produced the higher the disturbance that occurs in the hippocampal and neocortical systems. The disorder causes memory consolidation to become chaotic so that the REM phase of sleep becomes longer. Along REM phase can cause nightmares, sleeplessly, wake up in the middle of the night and wake up early. High cortisol also causes the body to become tense, making it difficult to enter the sleep phase (Payne & Nadel, 2008).

Pharmacological therapy has been used to treat sleep disorders, but potential side effects limit long-term interventions so that people use more types of interventions such as music therapy because they can induce a relaxation and disturbance response, which reduces activity in the neuroendocrine and sympathetic nervous system, which results in decreased pain, stress, anxiety and sleep disorders (Lafci, 2015). The fact that occurred in the field shows that children who are hospitalized due to hospitalization experience sleep disturbances especially in the first days of admission to the hospital, such as difficulty in starting to sleep, shorter sleep hours than usual, and frequent waking at night.

Data from the 2013 Basic Health Research shows that in the past year 2.3% of the Indonesian population has been hospitalized, while in East Java Province it is around 3%. Based on the age group, children aged 5-14 years were recorded at 1.3% who were hospitalized (RI Ministry of Health, 2013). Profile of Mojokerto Health Office in 2016 the number of inpatient visits in Mojokerto Regency in 2016 was 5.7%, and the number of inpatient visits at RSI Sakinah was 12,138 visits (Mojokerto District Health Office, 2017). More than 2 million children suffer from sleep disorders. Children need an

average of 9 to 10 hours of sleep each night, and an estimated 30 to 40% of children do not get enough sleep. About 1-3% of children not only snore but also suffer breathing problems during sleep. More than 263,000 children in the US have tonsillectomy every year and sleep apnea is the main reason (Cone Health, 2012). The results of the Anggraeny et al (2014) research in Ambarawa Hospital can be concluded that most children aged 6-12 years in Ambarawa Hospital have poor sleep quality before being given music therapy as much as 71.4%.

The results of the preliminary research at Sakinah Mojokerto Hospital on December 14, 2018 by interviewing parents of 3 hospitalized patients showed that 3 children (100%) had sleep disturbances, especially in the first days of admission to the hospital, such as difficulty in starting to sleep, 2 children (67, 7%) experience shorter hours of sleep than usual, and 3 children (100%) often wake up at night.

Factors that influence the quantity and quality of sleep according to them are health status, psychological stress, lifestyle, environment, diet and nutrition, medication, motivation (Hidayat, Listening to classical music impulses or sound stimuli will be received by the ears of the listener. Then the ear starts the listening process. Physiologically hearing is the process by which the ear receives sound waves, differentiates frequencies and sends information on the central nervous system. Every sound produced by the sound source or the vibration of the air will be received by the ear. These vibrations are converted into mechanical impulses in the middle ear and converted into electrical impulses in the inner ear which are transmitted through the auditory nerve to the brained auditory cortex. In addition to receiving signals from the thalamus (one part of the brain that functions to receive messages from the senses and continues to the other brain). The amygdala also receives signals from all parts of the limbic cortex (emotions/behavior) as well as the temporal lobe neocortex (cortex or brain layer that only exists in humans) parietal (midbrain) and occipital (hindbrain) especially in auditory associations and visual association areas. The thalamus also signals to the neocortex (the area of the brain that functions to think or process data and information that enters the brain). In the neocortex, the signal is arranged into objects that are understood and sorted according to their meaning, so that the brain

recognizes each object and the meaning of its presence. Then the amygdala signals to the hypothalamus and secretes endorphins which provide a calm effect (Primadita, 2011). Children who are sick and feel pain, then the need for rest and sleep cannot be fulfilled properly so that they can not sleep well. Prolonged sleep disturbances will result in changes in the biological sleep cycle, decreased endurance and reduced academic performance, irritability, depression, lack of concentration, fatigue, which in turn can affect the safety of yourself or Mozart others (Potter & Perry, 2010).

Efforts can be made to improve the quality of sleep by relaxation before going to bed, avoiding things that can cause stress before going to bed such as watching or reading stories that are tense and thinking about work, avoiding intermittent sleep during the day, avoiding heavy foods and stinging before bed sleep with a room that has good ventilation, sleep with the right position which is sideways right, if you cannot sleep after 30 minutes then you should wake up and do light activities such as listening to music (Rafknowledge, 2009). As a non-pharmacology method, music therapy is an easy-to-use, practical, and inexpensive initiative that can be done in nursing practice (Sarikaya, NA., & Oguz, 2016). Music therapy is an effective and risk-free approach to induce sleep/sedation in children (Wang, Q., 2016).

Based on the background above, the researcher was interested in examining the effect of classical music therapy on sleep disorder of children who had been hospitalized at Sakinah Hospital Mojokerto Regency

METHOD

This research used a pre-experimental type experimental design with a pretest-posttest one group design approach. The population in this research was all children who experienced hospitalization in the Muria Sakinah Hospital, Mojokerto Regency on February 26-March 21, 2019, consisting of 43 children. The sampling technique in this research used a purposive sampling technique where the sample selection was by the considerations of the researcher. The considerations were in the form of inclusion and exclusion criteria. The sample used in this research were some children who had been hospitalized in the Muria room at Sakinah Hospital Mojokerto Regency on

26 February-21 March 2019 which met the inclusion and exclusion criteria of 20 children.

The inclusion criteria in this research were hospitalized patients aged 6-12 years, patients who liked music, were willing to be respondents, while the exclusion criteria in this research were patients who experienced hearing loss and impaired consciousness. The research instrument used a Sleep Disorder Scale for Children (*SDSC*) questionnaire. The classical music used Mozart and Maestro Beethoven music. The statistical test used the Wilcoxon Signed Rank Test.

RESULT

Respondents General Data

1) Sex of the respondent

Table 1 Frequency Distribution of Respondents by Gender of Respondents in Sakinah Hospital Mojokerto Regency on February 26-March 21 2019

Child Gender	f	%
Man	12	40,0
Woman	18	60,0

Table 1 showed that the majority of respondents were female, as many as 18 respondents (60%).

2) Age of the respondent

Table 2 Respondent Frequency Distribution by Child Age at Sakinah Hospital Mojokerto Regency on February 26-March 21 2019

Age of child	f	%
6 Age	3	10,0
7 Age	9	30,0
8 Age	8	26,7
9 Age	7	23,3
10 Age	2	6,7
11 Age	1	3,3
Score	30	100

Source: Primary Data in 2019

Table 2 showed that almost half of the respondents were 7 years old, 9 respondents (30%).

3) Room Condition

Table 3 Respondents' Frequency Distribution Based on Room Conditions in Sakinah Hospital Mojokerto Regency on February 26-March 21 2019

Room condition	f	%
Using a fan	17	56,7
Using AC	13	43,3
Do not use both	0	0
Score	30	100

Source: Primary Data in 2019

Table 3 showed that most respondents used indoor fans as many as 17 respondents (56.7%).

4) Atmosphere Around the Room

Table 4 Distribution of Respondents' Frequency Based on the Atmosphere of the Room in Sakinah Hospital Mojokerto Regency on 26 February-21 March 2019

Atmosphere Around the Room	f	%
Crowded	7	23,3
Quiet	23	76,7
Jumlah	30	100

Source: Primary Data in 2019

Table 4 showed that almost all the atmosphere around the respondent's room was quiet, namely 23 respondents (76.7%).

Specific Data

1) Sleep Disorders Before Music Therapy

Table 5 Respondents' Frequency Distribution Based on Sleep Disorders Before Music Therapy was given at Sakinah Hospital in Mojokerto Regency on 26 February-21 March 2019

Sleep Disorders Before given Music Therapy	f	%
Less than sleep needs	25	83,3
More than sleep needs	5	16,7
Score	30	100,0

Source: Primary Data in 2019

Table 5 showed that almost all respondents rested their sleep less than the need for sleep before being given music therapy, namely 25 respondents (83.3%).

2) Sleep Disorders After Given Music Therapy

Table 6 Frequency Distribution of Respondents Based on Disorders of Sleep After Music Therapy was given at Sakinah Hospital Mojokerto Regency on February 26-March 21 2019

Sleep Disorders After given Music Therapy	f	%
Less than sleep needs	5	16,7
As per your sleep needs	21	70,0
More than sleep needs	4	13,3
Score	30	100

Source: Primary Data in 2019

Table 6 showed that most respondents break their sleep according to their sleep needs after being given music therapy, namely 21 respondents (70.0%).

Cross Tabulation of Sleep Disorders

Table 7 Sleep Disorder Before and After Given Music Therapy at Sakinah Hospital in Mojokerto Regency on February 26-March 21 2019

Sleep Disorder	Pre-test		Post-test	
	f	%	f	%
Less than sleep needs	25	83,3	5	16,7
As per your sleep needs	0	0	21	70,0
More than sleep needs	5	16,7	4	13,3
Score	30	100,0	30	100

Source: Primary Data in 2019

Table 7 showed that almost all (83.3%) respondents rested their sleep lacking sleep needs before being given music therapy changed to fit their sleep needs after being given music therapy, namely 21 respondents (70%).

The Wilcoxon Signed Rank test results showed value = 0,000 or less than α (0.05) so that H1 was accepted and H0 was rejected, which means that there is the influence of music therapy on sleep disturbances to respondents who experienced hospitalization at Sakinah Hospital Mojokerto Regency.

DISCUSSION

1) Sleep Disorders Before Music Therapy is Delivered at Sakinah Hospital Mojokerto Regency

The results showed that the average quantity of sleep for children on the second day of hospitalization slept for 9.2 hours. Based on table 5, it is known that almost all respondents rested their sleep less than the need for sleep before being given music therapy, namely 25 respondents (83.3%), and 5 respondents (16.7%) more than sleep needs.

The general response that occurs in respondents who are hospitalized includes regression, anxiety separation, apathy, fear, and sleep disturbances (Wong, 2012). Stressor stress causes respondents to experience stress, physiologically stress means an increase in the hormone cortisol. High cortisol disrupts the neurotransmitter system that regulates sleep and causes disturbances in sleep patterns (Riley, 2016). The higher the cortisol produced the higher the disturbance that occurs in the hippocampal and neocortical systems. The disorder causes memory consolidation to become chaotic so that the REM phase of sleep becomes longer. Along REM phase can cause nightmares, sleeplessly, wake up in the middle of the night and wake up early. High cortisol also causes the body to become tense, making it difficult to enter the sleep phase (Payne & Nadel, 2008).

According to researchers, almost all respondents who experienced hospitalization will experience sleep disorders especially on the first day of admission to hospital because they feel anxious, afraid, and worried about their illness, especially if they have to get invasive actions such as infusion, sampling blood, drug injections, will make the respondents more afraid and become a separate

stressor, as a result it will stimulate the body's hormonal functions that regulate stress, causing respondents to wake up easily at night and shorten their sleep hours.

However, some respondents (5 respondents) had more than 10 hours of sleep so they exceeded the body's needs, this could be due to the effects of drugs from the hospital which could cause respondents to get sleepy after being given.

2) Disorders of Sleep After Given Classical Music Therapy at RSI Sakinah Mojokerto Regency

The results showed that the average quantity of sleep for hospitalized children after being given music therapy for 3 days of sleep for 10.1 hours. Based on table 6 it was known that the majority of respondents rested their sleep according to their sleep needs after being given music therapy, namely 21 respondents (70%), 5 respondents (16.7%) less than sleep needs, and 4 respondents (13.3%) more than needed sleep.

Factors that affect the quantity and quality of sleep according to them are health status, psychological stress, lifestyle, environment, diet and nutrition, medication, motivation (Hidayat, 2014), exercise, caffeine, and alcohol. Efforts that can be done to improve the quality of sleep is to relax before bed, if you can not sleep after 30 minutes then you should wake up and do light activities such as listening to music (Rafkknowledge, 2009).

According to researchers, music can be used as therapy if the respondent has difficulty sleeping because music will have a calming effect if the music chosen is the preferred music. Here music acts as a media distraction to divert the pain that is felt as a result of nursing interventions such as infusion or injection, and also to divert to other fears of being in the hospital so that the brain that regulates anxiety, fear, and worry will be distracted to be calm, relaxed, so that sleep is not disturbed.

3) The Effects of Classical Music Therapy on Sleep Disorders of Respondents Hospitalized at Sakinah Hospital Mojokerto Regency

Table 7 showed that almost all (83.3%) respondents had lacking sleep needs before being given music therapy changed to fit their sleep needs after being given music therapy, namely 21 respondents (70%). The Wilcoxon Signed Rank test

results showed value = 0,000 or less than α (0.05) so that H1 was accepted and H0 was rejected, which means that there was an effect of music therapy on sleep disturbances to respondents who experienced hospitalization at Sakinah Hospital Mojokerto Regency. Music therapy is an effective and risk-free approach to induce sleep/sedation in child respondents (Wang, Q., 2016). Listening to music impulses or sound stimuli will be received by the ears of the listener. Then the ear starts the listening process. Physiologically hearing is the process by which the ear receives sound waves, differentiates frequencies and sends information on the central nervous system. Every sound produced by the sound source or the vibration of the air will be received by the ear. These vibrations are converted into mechanical impulses in the middle ear and converted into electrical impulses in the inner ear which are transmitted through the auditory nerve to the brain auditory cortex. In addition to receiving signals from the thalamus (one part of the brain that functions to receive messages from the senses and continues to the other brain). The amygdala also receives signals from all parts of the limbic cortex (emotions/behavior) as well as the temporal lobe neocortex (cortex or brain layer that only exists in humans) parietal (midbrain) and occipital (hindbrain) especially in auditory associations and visual association areas. The thalamus also signals to the neocortex (the area of the brain that functions to think or process data and information that enters the brain). In the neocortex, the signal is arranged into objects that are understood and sorted according to their meaning, so that the brain recognizes each object and the meaning of its presence. Then the amygdala signals to the hypothalamus and secretes endorphins which provide a calm effect (Primadita, 2011).

According to researchers, music therapy, especially the respondents' favorite music, will have a relaxing effect where respondents like music, the respondents will listen to music with concentration so that the music waves will be transmitted to the brain and affect the workings of the brain to regulate emotions and behavior which are then passed to the brain that secretes endorphins where these hormones will have the effect of feeling happy and calm, thus inhibiting the production of the hormone cortisol which can disrupt the function of sleep, thus respondents will get sleep according to the needs of the respondent's school age, which is about 10

hours. 4 respondents continued to experience more sleep than needed, this was because the respondents did not have activities while in the hospital so they could sleep many times a day, coupled with the effects of drugs that provide a drowsy effect so that respondents slept more often, and longer. This therapy does not give effect to respondents because it is also influenced by other factors.

5 respondents continued to experience sleep less than needed after being given music, this was because respondents could not focus on the therapy provided when the researchers asked respondents to close their eyes to concentrate and focus on the music provided, respondents did not follow the researchers' instructions. so the results obtained are not optimal.

The factors that influence sleep were the environment. The results of the research in table 3 showed that most respondents used indoor fans as many as 17 respondents (56.7%), and 13 respondents (43.3%) used indoor air conditioning.

An uncomfortable temperature or poor ventilation can affect one's sleep. But over time individuals could adapt and were no longer affected by these conditions.

Comfortable room conditions will make the respondent more asleep because the environment that is too hot or too cold will make the respondent have difficulty sleeping because the body's metabolic function is disrupted so that the work system of the brain that regulates sleep is also disrupted. Respondents who did not experience changes in sleep after being given music therapy were caused by 3 respondents who were in a room using AC where the air conditioner could be adjusted according to the conditions desired by respondents and felt most comfortable for respondents so that respondents would easily sleep which caused more sleep than needed.

The second environmental factor was the atmosphere around the room. The results of the research in table 4 showed that almost all the atmosphere around the respondent's room was calm, namely as many as 23 respondents (76.7%), and 6 respondents (30%) there were crowded around the room.

The environment could increase or prevent a person from sleeping. In a quiet environment allows one to sleep well. Conversely, a noisy, noisy and noisy environment will prevent a person from sleeping. The state of a calm and comfortable

environment for someone can accelerate the process of sleep (Hidayat, 2014).

A calm environment will cause the respondent to concentrate more when getting music therapy so that the sound that enters the brain is only the sound of music which gives a calming effect so that almost all respondents experience an improvement in sleep to suit their needs. However, 3 respondents who slept excessively consisted of 2 respondents who slept in a quiet environment and 1 respondent in a crowded environment. A busy environment when doing music therapy can also interfere with the therapy carried out because the sound of music will blend with the noise in the room which makes it difficult for respondents to concentrate. But the crowded environment will not always be 24 hours crowded, there are certain times when the atmosphere is crowded so the respondents can still sleep comfortably, and also the condition of the room using AC so that respondents are easier to sleep so that sleep is more than the body needs.

CONCLUSION

- 1) Sleep disorder before being given music therapy to children hospitalized at Sakinah Hospital Mojokerto Regency almost all of them are less than sleep needs, which are 23 respondents (76.7%).
- 2) Disorders of sleep after being given music therapy to children hospitalized at Sakinah Hospital Mojokerto Regency almost entirely according to sleep needs as many as 26 respondents (86.7%).
- 3) There was an effect of classical music therapy on sleep disorders of children hospitalized at Sakinah Hospital Mojokerto Regency. This was evidenced by the results of the Wilcoxon Signed Rank Test with p -value = 0,000 or $< \alpha$ (0.05).

SUGGESTIONS

1) For Respondents

Children are expected to listen to their favorite music with concentration while having difficulty sleeping, reduce napping too long by doing light activities such as watching TV, playing lightly with a family who accompany in the hospital such as playing monopoly, puzzles, and others who do not need heavy activity.

2) For Nursing Personnel

It is expected that health service institutions can consider music therapy to deal with sleep disorders in children who experience hospitalization.

3) For Further Researchers

It is expected that further researchers will research music therapy to overcome sleep disorders using a control group.

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