

The Effect of Music on Sleep in Patients with Depression

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Abstract: According to the latest statistics from the World Health Organization, an estimated 3.8% of the population experiences depression. Approximately 280 million people in the world suffer from depression. Among them, about 70% to 80% of patients with depression are accompanied by sleep disorders. Sleep disorders often cause symptoms such as emotional instability, memory loss, reduced immunity, and increased blood pressure. Music therapy is a non-invasive alternative therapy for relieving depressive symptoms. Unlike antidepressants and psychotherapy, it has no obvious side effects or adverse reactions, making it easier for patients to adhere to. It is also an inexpensive treatment option that requires minimal time and energy. As a result, music therapy has become more popular in the field of antidepressant therapy. Sleep disorders are one of the most common manifestations in patients with depression, and music has a certain impact on sleep, so it is of great significance to explore the impact of music on the sleep of patients with depression. This paper summarized the music therapy on people with depression and found that music therapy would improve their sleep quality and decrease their anxiety level and depression.

Keywords: music therapy, music psychology, depression, sleep, effects

1. Introduction

Depression is a common mental and psychological disorder, and patients are often accompanied by sleep disorders. As a non-pharmaceutical intervention, music is widely used in the treatment of patients with depression. In recent years, an increasing amount of study has been conducted on the impact of music on the sleep of patients with depression, especially the use of different types of music to explore the effect of improving sleep quality [1].

Current studies have shown that music can improve the sleep quality of patients with depression to a certain extent and relieve their sleep disorders. There are differences in the sleep improvement effects of different types of music on patients with depression. For example, soft and brisk music can relieve patients' tension and help them relax, thereby improving sleep quality. Moreover, some studies have found that individual differences may affect the effect of music on sleep.

Although many studies have explored the effects of music on sleep in patients with depression, there are still some research gaps. For example, at present, there is no large-scale subdivision and in-depth research on the different types and severity of patients with depression, and the use of the same type of music for patients with different types and severity of depression may produce different reactions.

This paper will review the research on the influence of music on the sleep of patients with depression. By searching and reviewing relevant literature on China National Knowledge Infrastructure, the research design, research objects, music types, sleep indicators, etc. of each research will be summarized and analyzed.

The treatment of depression requires a comprehensive treatment plan. And many studies have shown that music can not only help relieve the psychological state of patients with depression but also improve their sleep quality, so music therapy can be an effective tool in the treatment of depression. This paper reviews related research, which will help to further explore the role and value of music in the treatment of depression.

2. The Physiological Effect of Music on People

In 2005, the American Music Therapy Association (AMTA) published the official definition of music therapy: Music therapy is the clinical and evidence-based use of music interventions to achieve individual goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program [2].

The World Federation of Music Therapy (WFMT) defines music therapy as “qualified music therapists use music or musical elements (sound, rhythm, melody, and harmony) for individuals or groups to promote communication, learning, mobilization, expression, organization, socialization, and other related treatment goals to improve patients’ physical, emotional, psychological, social, and cognitive needs” [3].

A sizable number of existing studies, both domestic and international, have shown that music can cause a variety of physiological reactions, including lower blood pressure, slower breathing, slower heartbeat, increased skin temperature, decreased muscle potential, decreased skin resistance, increased blood vessel volume, and decreased nor epinephrine and epinephrine content in the blood. As a result, the body’s equilibrium is greatly improved, tension and anxiety are reduced, and relaxation is promoted. Long-term physical and psychological stress can harm the human body and create somatosensory symptoms [4].

Additionally, music has potent analgesic properties. Due to the fact that the auditory center and pain center are located in the temporal lobe of the brain, music stimulation activates the auditory center, which can effectively suppress the adjacent pain center and greatly reduce pain. In addition, music can increase the concentration of endorphins in the blood, which has a strong analgesic effect. According to a large number of trials and clinical reports, using music during surgery can reduce the dosage of anesthetics by half, and the demand for painkillers during the recovery period can be significantly reduced [4].

Studies on the effectiveness of music therapy have shown that it can improve the mood of depression patients, improve sleep quality, stress, anxiety, total sleep time, disease severity, and psychological quality of life in insomnia patients [5].

3. Mechanism of Action of Music on Sleep

Related studies have shown that music can regulate various bodily systems, including the digestive, cardiovascular, immune, and respiratory systems. This is because the vibration of different tones of music can stimulate specific areas of the brain and activate the relevant nervous system of the hypothalamus-pituitary-adrenal axis. And through mechanisms such as relaxation, distraction, and masking external noise, sleep quality is effectively improved [6-7].

Some researchers have summarized the three effects of music on sleep, namely, the relaxation effect, the dispersion effect, and the masking effect. However, the treatment mechanism and effect mechanism of music therapy in improving sleep quality are more complex. Judging from the known

mechanisms, the relaxation effect and dispersion effect are to improve sleep quality by changing the patient's subjective consciousness; while the masking effect is to improve the patient's sleep quality by changing the objective auditory environment. Therefore, the mechanism of music therapy to promote sleep needs to be further explored [8].

In addition, studies have shown that 50 to 150 Hz audio stimulation can induce sleep brain waves in normal subjects during non-sleep hours, and some subjects can maintain sleep after the audio stimulation is over. 50~150 Hz audio stimulation can induce sleep and shorten the sleep guide period [9].

Some researchers, such as Yang Tao and others, believe that the mechanism of action of music therapy in the treatment of insomnia is not yet clear. They mentioned that researchers at home and abroad have explored the mechanism of influence of music therapy on the human body from different angles. These studies can provide a reference for the mechanism of action of music therapy in the treatment of insomnia. For example, Pan Liang et al. studied the mechanism of traditional Chinese medicine five-tone therapy to treat diseases from the perspective of sonic resonance; Raglio et al. found that music can regulate the activity of the emotional core area; Yeh et al. found that music can reduce the secretion of cortisol, improve mood disorders, promote neurogenesis and brain nerve regeneration and repair; Salimpoor et al. found that the striatum releases dopamine when listening to music. However, whether the effect of music therapy on the human body can correspond to the relief or treatment of insomnia symptoms still needs to be further explored by future researchers for patients with insomnia [10].

4. The Effect of Music on Sleep in Patients with Depression

Depression is a mental and psychological disease, and its main symptoms include depression, loss of interest, fatigue, anxiety, low self-esteem, and sleep disorders. Depression will not only affect the physical health of patients, but also affect their emotional and cognitive functions, and have a negative impact on the patient's social, work and family life. In addition, the sleep quality of patients with depression is also greatly affected, manifesting as difficulty falling asleep, shallow sleep, easy waking up, early waking up, etc.

Sleep is an important part of human physiology. Sleep is not only an important period for the body to recover and repair, but also regulates the function of the nervous system and maintains the body's healthy state. Lack of sleep or poor sleep quality can seriously affect physical and mental health, such as decreased immunity, inattention, memory loss, mood swings, etc., leading to symptoms such as depression, fatigue, and inattention. The improvement of sleep quality can relieve physical and psychological stress, improve the quality of life, and improve work efficiency.

Music therapy is widely used in the treatment of patients with depression. And music has a certain impact on sleep. At present, there are many studies on the influence of music on the sleep of patients with depression, indicating that it has important clinical significance and research value.

Some researchers have summarized the rehabilitation effects of music therapy on depression, namely, improving mental state and reducing depression levels. Music therapy relieves, reduces negative emotions, improves sleep quality; optimizes mental state, and improves quality of life [11].

4.1. Music Therapy for Patients with Specific Types of Depression

He Fengxiang's research explored the clinical treatment effect of music therapy on sleep disorders in patients with postpartum depression. In the study, 100 patients with postpartum depression and sleep disorders admitted to Fujian Geological Hospital from May 2019 to May 2021 were selected, and they were divided into an observation group and a control group using a random number table method. The observation group increased music therapy on the basis of the control group. The study

revealed a significant difference between the sleep quality score and anxiety and depression score of the observation and control groups, with the former presenting notably lower scores. This difference was found to be statistically significant. Therefore, for patients with postpartum depression and sleep disorders, the application of music therapy can significantly improve the sleep quality and psychological condition of patients, and it is worth popularizing and applying [12].

4.2. Combination Therapy of Music Therapy and Other Methods

There are some studies that have explored the effects of behavioral intervention combined with music therapy on sleep in patients with depression.

Duan Haishui and others observed and studied the efficacy of music therapy combined with behavioral intervention on patients with depression and sleep disorders, and discussed the effects on patients' arousal and suicide risk. In the study, 102 patients with depression and sleep disorders were selected and randomly divided into two groups: an observation group and a control group. Both groups underwent 4 weeks of treatment. The results showed that the sleep quality, anxiety and depressive symptoms of the patients in the observation group improved, their self-efficacy and arousal scores were also higher, and their suicide risk scores were lower. Therefore, combined music therapy and behavioral intervention in the treatment of depression and sleep disorders have good clinical efficacy, can significantly improve the sleep quality of patients, relieve patients' anxiety and depressive symptoms, and reduce patients' risk of suicide [13].

Wang Yangyang and others discussed the effects of behavioral intervention combined with music therapy and psychological intervention on the arousal and sleep quality of patients with depression and sleep disorders. The study selected 64 patients with depression and sleep disorders and randomly divided them into an observation group and a control group. After treatment, the two groups' scores for arousal, sleep quality, negative emotions, and self-acceptance were compared. The outcomes showed that the observation group's arousal score was higher than the control group's, its sleep quality score was lower than the control group, and the patients' anxiety and depression improved, and their self-acceptance was also better. Therefore, behavioral intervention combined with music therapy and psychological intervention can improve the sleep quality of patients with depression and sleep disorders, improve their arousal, and improve patients' anxiety and depression [14].

5. Conclusion

In summary, music has various physiological effects, such as reducing blood pressure, increasing relaxation and decreasing pain. It can also increase endorphin levels, reducing the need for anesthesia and analgesics. Music therapy is effective in improving mood, sleep quality, stress and anxiety. Music therapy improves sleep quality by stimulating specific brain areas and regulating bodily functions. Different audio frequencies can induce sleep. The mechanism of music therapy in insomnia treatment needs further research. Depression can cause sleep disorders, and music therapy has been found to have a positive effect on improving sleep quality in patients with depression. Music therapy can be combined with other methods for better clinical results. Therefore, music should be used as an important tool in the clinical and research of depression.

In the research mentioned in this paper, the research subjects are basically large sample groups, and there is a lack of research on specific individuals.

There are still many shortcomings in this article, such as the fact that the search for literature is not comprehensive and specific enough, the search only on the platform of the China National Knowledge Infrastructure has certain limitations, and it focuses more on the review of domestic research in China.

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