The effectiveness of music therapy on depression

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Abstract. This paper reviewed some of the current studies on how music therapy affects the reduction of depression symptoms for patients. The current necessity of contributing to this review will be discussed with a broad overview of the most recent studies by researchers. Further arguments about the common factor contributing to all studies would be mentioned and inferred towards the evaluation of the necessity of the methods and their further improvements. The final section would summarise the current consolidated view of the clinical practices and values of music therapy, discussing further improvements and future expectations to solidify the practical values and applications.

1 Introduction

Involved with depressed mood, or loss of pleasure or interest in activities for long periods of time, depressive disorder is a common mental issue for people. Besides clear destructive mental features, poor concentration and disrupted sleep, along with depression, would show an undoubtedly negative impact on the physical body. Depression is one of the disorders that disturbs most people around the world [1]. In the United States, 5.9% of adults experienced major depression symptoms in 2024. As a disorder that will disturb normal social functioning and social safety in terms of mental and physical health, it is necessary to ensure the efficient mechanisms to cure depression for the patients. Currently, three main conventional methods of curing depression symptoms could be concluded as psychotherapy, pharmaceutical treatments, and electroconvulsive therapy. However, few successful cases would support the strong effectiveness of the conventional approach towards depression. In this case, new exploration needs to be conducted in order to improve the clinical field on depression issues. Music therapy would be considered a non-pharmaceutical approach in which fewer side effects would be involved. Thus, it would be significant to work on ensuring that music therapy would be effective in curing all patients in the clinical field to bring improvement to the conventional approaches. Apart from that, the current field of musical therapy is still on its way to development, in which the impact of this approach on the patients is still not clarified. Although in the past twenty years, more and more studies and experiments have started to investigate the musical therapy on depression, it is still amateur and uncertain, and more connections are required to ensure valid positive results contributing to depression.

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Recent studies have demonstrated a clear recognition of the strong potential of musical treatment in the clinical field. Different papers from varied countries are being selected and considered to ensure the generalizability of this conclusion. Among them, five articles are selected from China updated over the past 10 years. All of them are using longitudinal studies with questionnaires to collect quantitative data (statistical analysis) and qualitative data (part of the papers) to show the firm results. Another five articles are selected globally, with more varied races and cultures, to further support the fact that the result of music treatment's positive improvement on depression patients across different cultural backgrounds and races.

Despite the supportive fact from all the papers, one main weakness is raised from the use of samples among all these studies. Teenagers are not involved in any studies reviewed in the following. In particular, the teenagers were largely ignored in past studies [2] From all the studies used as previous examples above, it is obvious that the majority of them are aimed at adults, with some of them aiming at elderly people over 60 years old. However, none of them have the aim for people under 18 years old. This is an essential gap that needs to be filled, as the rapid growth of the economy and change in the style of society, the depression rate among teenagers was rapidly increasing, which this group of people requires more attention and focus on curing them effectively as well. Moreover, the life period from 12-18 years old would be considered the most important period in life for learning knowledge, gaining mental growth, and forming personality traits. It is the period of time for inspiration towards the future and striving for motivation and dreams. If people are experiencing destructive behaviours during this time, they would lose countless opportunities to study, and their prospects in the future would be totally changed in terms of their strength of career prospects and family life. These are the crucial aspects they need to prepare for their adult life, in which depression would cause major destruction to the growing process. In a more serious consequence, many people would give up their lives because of depression, which is a considerable failure in both humanity and potential resources for talented people for society. In this case, this review paper would mainly focus on demonstrating studies that would provide strong support for the fact that musical treatment would be proven to have positive result on the teenage patients. Further discussions of limitations and expectations in the future study for mechanisms for reducing teenage depression symptoms would be added to evaluate the paper at the end of the review.

2 The comparison between music treatment and the conventional approach to depression patients

Diabetes patients would be concerned with whether they have the same reduction symptoms of the depression like the normal patients under music treatment. In the study of Li & Zhu (2011) [3], the main focus is to investigate the effect of herbalist traditional musical treatment on symptoms of depression in patients with diabetes. For the sample, the control group and the observation group have the same number of people, with 30 people each. The average age of the 13 girls and 17 males in the control group was 56.12. The average age of the 11 girls and 19 males in the observation group was 57.06. Regular medications for diabetes management combined with cognitive therapy would be given to the control group. In the observation group, however, the participants would listen to the traditional tonality of Chinese music to match their different moods. For example, if the participants were feeling sentimental, then music pieces in the "Gong" pitch improved. The musical treatment would be operated once every two days, with each time lasting for 30 minutes and 4 weeks for one period. The total period would last two periods. The depression symptoms would be meas-

ured before the treatment, 4 weeks after the treatment (after one period), and after two periods. As a result, the musical treatment was proved to have an increase in efficiency of 82.76% compared to the control group. There was a larger reduction in the average depression rating for the observation group after the two periods. In short, the traditional Chinese musical treatment was proved to have a positive result, which is, to a large extent, in assisting the reduction in the symptoms of depression for patients who have diabetes. Thus, it is proved that the music treatment would also prove to have the same effect on the diabetes group of people.

Music therapy is again consolidated by the effectiveness in the following study. In this study by Erkkilä et al. (2011) [4], the aim is to test whether music therapy would be efficient combined with standard care, in contrast to only receiving conventional treatment for patients with depression. 79 participants were involved in the study, ranging from 18 to 50 years old. This experiment was conducted at the Music Therapy Clinic for Research and Training at the University of Jyväskylä, Finland. They were randomised to receive individual music therapy plus the standard care with 20 bi-weekly sessions or standard care only. Clinical measures such as depression, anxiety, and general functioning were included. These assessments were conducted at baseline and 3- and 6-month follow-up. For the results, participants in the experimental group received a much higher improvement in the reduction of depression symptoms, anxiety symptoms, and general functioning at the 3-month follow-up time, which indicates that the musical treatment would be having a positive effect on the patients in contrast to the conventional approach, with a better result.

Clear indication of the involvement of music would prove a different effect to the conventional approach of the treatment of depression. In this study by Castillo-Pérez et al. (2010) [5], the aim is to test the effects of music on depression and compare them to the effects of psychotherapy. Given the hardly successful results reported from the conventional methods, new methods must be explored in order to improve the clinical practice field. In this case, 79 participants were selected aged between 25-60 years old with a low or medium grade of depression. The Zung Depression scale was used during the process of selection. After random assignment into a musical therapy group for 41 people and a psychotherapy group for 38 people, the musical therapy was applied for 50 minutes every day and lasted for 8 weeks. Positive change was found after the fourth round in the musical treatment group. Between the seventh and the eighth week, 29 participants from the MT group showed improvement in depression symptoms, with 4 feeling a lack of improvement, and 8 of them abandoned the study. The psychotherapy group shows 12 participants with improved feelings, 16 people feel they did not improve, a quit the study. With the comparison, it is obvious that the musical treatment was proven to have a high and efficient effect on the reduction of depression symptoms compared to the conventional psychotherapy mechanisms in adult patients.

Mediation would be an interesting factor that might help the effectiveness of music therapy. In this study by Wan (2024) [6], the main focus is on the effect of mindfulness training with musical therapy on the sleep quality and mood state of elderly patients with depression. The sample would be from the Jiangxi Geriatric Department of Psychiatric Hospital, with 81 participants. The observational group would consist of 40 people, 24 male and 16 female, ranging from 66-78 years old, with an average of 72.59 years old. The control group would consist of 41 participants, with 26 males and 15 females ranging from 67-80 years old, with an average of 73.60 years old. The control group would carry out the musical therapy only, with the observational group adding the mindfulness training on top of the musical therapy with 30 minutes per session and 1 time per day. The depression and anxiety symptoms as well as sleep quality would be compared before and after the intervention for all the participants. For the results, the depression rating from the observational group is significantly lower than the control group, which symbolizes the reduction of symptoms of depression, the

same result for anxiety and sleep, which shows the improvement in sleep quality and reduction in anxiety mood. Thus, it is obvious that this study supports the main statement that musical therapy combined with mindfulness training would result in an improved effect of reducing the symptoms of depression in an elderly group of participants.

3 The effectiveness of Musical Treatment Combined with other factors

With modern technology in scientific equipment, this would be necessary to evaluate its effect on helping the musical treatment effects. In this study by Wang et al. (2024) [1], the main goal is to test the effects of music therapy combined with ultra-low frequency transcranial magnetic stimulation with patients that have depression. The sample would be a total of 96 patients in Quanzhou Third Hospital from June 2022 to August 2024, and they would be divided into two groups of the same number randomly. For the observational group, there were 27 males and 21 females, with an average of 49.35 years old, ranging from 25 to 74 years old. For the control group, there were 25 males and 23 females with an average of 49.56 years old, ranging from 24-76 years old. The control group would receive the normal nursing procedure, with the observational group having musical therapy and ultra-low frequency transcranial magnetic stimulation at the same time. Then, the experimenters would compare the changes in sleep quality, emotional states, and psychopathological symptoms weeks after continuous intervention. As a result, the emotional state scores would be significantly lower than the control group from the observational group, which indicates a lower degree of negative emotions and moods. For the sleep ratings, the observational group would have a lower rating than the control group, which shows better improvements in sleep quality. Also, for the psychological symptom rating, the observational group has a larger decrease in the rating than the controlled group after the musical treatment, which shows a decrease in psychopathological symptoms of typical depression. In conclusion, for all ratings measurements, the result is obvious that musical treatment combined with ultra-low frequency transcranial magnetic stimulation with patients that have depression would have a better effect of decreasing the depression symptoms than traditional drug treatment across the same period.

For the particularly severe level of depression, music treatment might be doubted in its effectiveness compared to conventional approaches. In this study by Fang et al. (2023) [7], the main focus is to investigate the effect of musical therapy on severe depressive disorder based on the fundamental drugs. The sample would involve 80 participants with random allocation into the observational group and a controlled group of the same number. In the observation group, there are 15 males and 25 females aged between 18-65 years old. In the control group, there are 14 males and 26 females aged 18-66 years old. For fundamental medicine, Paroxetine hydrochloride hemihydrate and Escitalopram Oxalate are used to provide stability to the patient's mood. For the observation group, participants were provided with musical treatments. Two main technologies were used, i.e., rhythmic auditory stimulation and patterned sensory enhancement. All participants were required to report their depressive symptom questionnaires in the first week, fourth week, eighth week, and twelfth week after the treatment started. For the result, there is no significant difference after the first week. However, other records at longer periods show a significant difference. After two weeks, the observation group got an average rate of depression score of 27.27, with the control rated 28.42. The lower the rate, the less severe the depression symptoms are. In conclusion, the musical treatment would prove to have a positive association with helping the participants to receive a better reduction in depression symptoms. Thus, it is regarded as an effective and plausible method to apply treatment to severe participants as well.

Particular drug or medicine involved to the participants might cause different outcomes. This study by Shi (2020) [8] focused on investigating the effect of musical treatment on the reduction in symptoms of depression patients based on sertraline hydrochloride medicine. The sample would mainly use 480 participants from the Department of Psychology, Zhengzhou Ninth People's Hospital. They would be divided into two groups, with an observation group and a controlled group. For each group, they consisted of the same number of people. In the observation group, there are 107 males and 133 females with an average age of 35.42 years old. In the control group, there are 131 females and 109 males with an average age of 35.58 years old. Both groups would use the sertraline hydrochloride as a stabilizer for their mood. For the observation group, musical treatment would be provided three times per week and one hour per time. It will last for 8 weeks for a period. Also, there will be treatment for the observational group before their sleep for 30 minutes three times a week and 8 weeks for a period. Depressive symptoms would be measured before the treatment, two weeks after, 5 weeks after, and 8 weeks after. Also, quality of life would be recorded after one period of treatment. As a result, for the depression rating, the observational group shows a significantly greater reduction in symptoms of depression after two weeks of treatment, with 19.91, whereas the controlled group stands for 20.18. The difference between the two groups remains around 0-5 in the rating, which indicates a less severe level of depression in the observation group, while their initial measurement is all within 24 ratings. For the other questionnaire, the observation group also showed significantly higher living quality than the control group after the treatment started. As a result, the musical treatment based on the use of sertraline hydrochloride would have a proven effect of improving the reduction of depression symptoms and the living quality of the patients. Thus, it is proven that the participants with sertraline hydrochloride medicine would still receive a positive result in the music treatment.

Other than the normal approaches to the traditional music genre, the improvisational music therapy as a brand-new approach to the patients might still prove a firm effectiveness towards the reduction of depression symptoms. In this study by Erkkilä et al. (2008) [9], the aim is to fill the gap in the knowledge of whether improvisational music would have a positive effect on depression symptoms. In the experiment, 85 adults (18-50 years old) were involved with depression, and they were randomly assigned to the control group and the experimental group. All participants receive standard care, but for the experimental group, extra musical treatment would be applied over a period of 3 months. A blind test would be conducted before testing, after 3 months, and after 6 months of treatment. Few conducted studies show that music may be highly likely to have a positive effect on the reduction of symptoms of depression. However, it still leaves many questions open. Further investigation and consolidation of the data should be conducted to make the musical treatment more reliable in clinical practice. In this case, the conclusion is still not firm yet, but a positive prediction could be drawn towards further studies by the evidence of the case above.

Older people would be considered a particular type of group of people that requires specific, efficient treatment mechanisms. In this study by Chan et al. (2012) [10], the aim is to determine the effect of music on depression levels in older adults. For the study, 50 participants were involved in Singapore, with 24 participants in the music group and 26 in the control group. The participants listened to their choice of music for 30 minutes every week, and this lasted for eight weeks in total. The measurements were taken every week during the study. As a result, the depression level reduced weekly. Particularly significant differences were found at week 4, week 6, week 7, and week 8. For the control group, no significant improvement was found for the depression symptoms with trend analysis over the eight weeks. In this case, it is obvious to say that musical treatment has a significant positive effect

on the reduction of depression symptoms. Thus, the involvement in the music environment would clearly bring an efficient improvement for elderly people.

Accumulation of time is aimed at the process of spending a certain amount of time in the study to receive the final result. The time would be essential to show the valid conclusion from the methods used, instead of spending enough time to show the full effect of the comparison of two different methods on the same sample group population. For example, for the measurement of music treatment in the study, this would be necessary for the time waiting process to reach the final result, that despite combination of different characters or only the methods alone, they both reach the conclusion that it would be certain to have a more efficient effect in the level of reduction of depression symptoms. Thus, this would be an essential factor in the musical treatment experiments to show the matched result with the hypothesis that it would be stronger in the clinical cure for patients with depression.

For this point, it is well supported in the reviewed papers. Consistent with the accumulation of time, the study of Fang et al. (2023) [7], which involves measurements with a duration of 12 months after the treatment period, shows a clear indication of the long duration of the study. This is intended to showcase the adequate time for the process, as for the research on musical treatment, it would not be as quick for the change of depression symptoms, as for medicines and drugs. Another example could be seen in Erkkilä et al. (2008) [9], where the questionnaires for qualitative data were continued for repeated measurements until 6 months after the experiment. It could be implied that this is one of the common themes of the reviewed study on music treatment in order to support the validity of the result for the study. Taking adequate time in the study is an essential part of the study on music treatment; taking repeated measurements by having different experimental designs would also enhance the study in a good way. However, most of the studies reviewed in this paper show a lack of support for using repeated measurements in the study, as most of them use matched pairs and independent measurements. Although there might be practical limitations such as order effects and demand characteristics, it is one of the potential improvements that could be referred to improving the validity and reliability of studies. Overall, it could be inferred that the accumulation of time is well supported among the reviewed studies by having common features in the particular explanation of providing an extra period of time for measurements.

4 Conclusion

In conclusion, the current study of music therapy has proven to have a positive result in the reduction of depressive symptoms. In fact, the majority of the studies reviewed in this paper supported the extra view that music therapy would have a better effect than the conventional approach on the patients. Specifically, the accumulation of time in each study is discussed above, with a clear indication that each study uses the common feature, which suggests the necessity of this measurement taking place, with a major contribution towards the validity and reliability of the studies.

Also, future indications that could improve the current field are the use of repeated measurements in the study. By adding more repeated times on measurements, the results of each study could be checked through quantitative data and thus ensure its validity. In each study, the use of questionnaires to measure the change of symptoms could also add to the variety, which should include at least five for each study. This could also enhance the generalizability of the study and increase mundane realism, as different questionnaires would reflect a broader view of the symptoms instead of the one-sided approach that would be biased for the results. Further neural activities in different brain areas (e.g., hippocampus) that can be examined by neuroimaging techniques, would provide another prospect to address the lack of objective

quantitative data compared to the questionnaires. The music treatment still needs a lot of research to solidify its functions for the patients.

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