Journal of Infrastructure, Policy and Development 2024, 8(7), 8020.
https://doi.org/10.24294/jipd.v8i7.8020

Review

A systematic literature review of the impact of music therapy on the management of depression in patients with chronic diseases

Fei Guo*, Ali Khatibi, Jacquline Tham

Management and Science University, Postgraduate Center, Selangor Darul Ehsan, Shah Alam 40100, Malaysia
***Corresponding author:** Fei Guo, bwguofei@gmail.com

CITATION

Guo F, Khatibi A, Tham J. (2024). A systematic literature review of the impact of music therapy on the management of depression in patients with chronic diseases. Journal of Infrastructure, Policy and Development. 8(7): 8020. https://doi.org/10.24294/jipd.v8i7.8020

ARTICLE INFO

Received: 29 April 2024
Accepted: 27 May 2024
Available online: 26 July 2024

Abstract: Depression is a mental disorder caused by various causes with significant and persistent depressed mood as the main clinical feature, and is the most common mental illness worldwide and in our country. The number of patients with depression worldwide was as high as 350 million in 2017, and the number of patients with depression in our country was nearly 100 million in 2019. The greatest danger of depression is self-injurious and suicidal behaviour, and this behaviour carries a high medical burden. Medication is the most costly treatment for depression in China, and while it is an effective way to treat patients with depression, it has many side effects and poor patient compliance. Non-pharmacological treatments commonly used in clinical practice include physiotherapy and psychotherapy. Physiotherapy is commonly used in non-convulsive electroconvulsive therapy, but its clinical efficacy is uncertain and it can also cause adverse effects such as heart failure and arrhythmias, which are poorly tolerated by patients. Psychotherapy is also a common non-pharmacological therapy. Cognitive therapy is a common form of psychotherapy, but the cycle of cognitive therapy is too long, the cost to the patient is high, and the patient's cognitive ability has certain requirements. Music therapy is a combination of art and science. It is a cross-discipline that combines body, movement, dance and psychology and is a method of psychotherapy that has biological, psychological and social functions to compensate for deficiencies. Music therapy sees a fundamental connection between mind and body and emphasises that what affects the body also affects the mind. When mind-body integration is lacking, individuals will suffer from a variety of psychological disorders. Therefore, the core principles of music therapy emphasise that holistic individual health is embodied in the integration of mind and body, that body movement is expressive and communicative, and that music therapy uses body movement as a method of assessing the individual and as a means of clinical intervention.

Keywords: music therapy; chronic illness; depression treatment

1. Introduction

Music therapy is a branch of psychotherapy and creative arts therapy, which was defined by the American Music Therapy Association in 1972 as "the process of using movement for psychotherapy to promote the emotional and physical integration of individuals". The application of music therapy in China began to be studied in the early 1990s, for example, a study was conducted in 1993 to verify the improvement of three major symptoms of chronic schizophrenic patients through music and dance interventions (Su et al., 1993). Since then, there have been experts and scholars through music therapy for depression management and other mental disorders. At the beginning of the 20th century, there was a research on the application of music therapy to the development of mental health of college students in the process of education and teaching. To date, music therapy has been widely used in the rehabilitation of

various mental and neurodegenerative diseases, mental health intervention or psychotherapy for special people, mental health promotion for the general population and other related fields. In recent years, people have been paying more and more attention to their physical and mental health and quality of life. Especially with the implementation of the important national strategy "Healthy China", music therapy as a kind of "non-medical health intervention" has received more and more attention. Against this background, this study systematically compiled and analysed the applied research on music therapy in China, with the aim of providing a reference for subsequent studies and contributing to the deepening and development of the field.

2. Background to the study

2.1. Sharp increase in mental illness due to new coronavirus major health event

In December 2019, a new coronavirus pneumonia (coronavirus disease 2019, COVID-19, hereafter referred to as "new coronavirus pneumonia") was identified and reported for the first time. New coronavirus pneumonia is caused by a novel coronavirus, which can be transmitted by respiratory droplets, indirect contact, aerosols and other modes, with an average incubation period of 5.2 days. The World Health Organization (WHO) officially declared the neocoronavirus pneumonia outbreak a public health emergency of international concern (PHEIC). On 11 March 2020, WHO also declared the outbreak a pandemic. This means that the C. neoformans epidemic poses a major threat and challenge to the global public health system. As of 24 May 2020, 31 provinces (autonomous regions and municipalities directly under the central government) and the Xinjiang Production and Construction Corps in mainland China have cumulatively reported 82,985 confirmed cases of C. neoformans pneumonia, and a total of 4634 deaths have been reported.

In its World Mental Health Report (2022), the World Health Organization found that the global prevalence of anxiety and depression increased significantly by 25% in the first year of the New Crown epidemic pandemic. Other research suggests that by the end of 2021, the New Crown epidemic will have resulted in an additional 70 million depressed patients, 90 million anxious patients and potentially several hundred million insomniacs worldwide.

Previous studies of Severe Acute Respiratory Syndrome (SARS) 07–19, Middle East Respiratory Syndrome (MERS) and Ebola Virus Disease (EVD) have shown that outbreaks and pandemics can be extremely stressful for the public and cause a range of mental health problems, including depression, anxiety, stress and insomnia. Studies during epidemics have shown that outbreaks and pandemics can be very psychologically taxing for the general public, causing a range of mental health problems including depression, anxiety, stress and sleeplessness. As a new round of major public health events, the XKP epidemic is bound to be a major stressor and trigger mental or psychological problems in people.

Depression is an unhealthy state of mind that manifests itself as a prolonged period of reduced volitional activity, low mood, slowed reaction time, attention deficit, significant weight loss and associated suicidal thoughts. According to the World

Health Organisation, 322 million people worldwide suffer from depression, representing 4.4% of the world's population. Depression has many detrimental effects on people's lives, leading to an increased risk of cardiovascular disease, disability, reduced quality of life and increased mortality. Depression is more prevalent in patients with chronic diseases and increases their healthcare costs, creating an additional financial burden. However, in clinical practice, clinicians focus more on the physical illness and less on the patient's mental health and how it contributes to physical health and illness. Depressed patients usually feel ashamed to seek medical attention for their illness and refuse to do so by deliberately concealing their condition, which can make the diagnosis of depression more difficult (Wolfgang et al., 1993).

At the beginning of the C.N.C.P. epidemic, the detection rate of anxiety symptoms among the general population in China was 31.6%, while the detection rate of somatisation symptoms was only 7.59%. The detection rates of anxiety symptoms were higher among those infected with C. neoformans and among adolescents1251 than among the general public, at 47% and 37.4%, respectively. During the epidemic, the detection rates of anxiety symptoms and somatisation symptoms in the Chinese general population were 31.9% and 45.9%, respectively, with no significant difference in the detection rate of anxiety symptoms from the beginning of the epidemic, but with a significant increase in the detection rate of somatisation symptoms.

2.2. Increasing trend in the incidence of chronic diseases, physical and mental health of patients cannot be guaranteed

Non-communicable chronic diseases (NCDs), or chronic diseases for short, are a group of diseases caused by a variety of factors such as poor lifestyle, genetics, physiology, psychology and social environment. Because of the lack of precise evidence of infectious agents, will not cause the spread of the population, generally insidious onset of disease, once the onset of disease, the course of the disease lasts for a long time, the development of slow, protracted and difficult to cure, so the common name of such diseases as chronic diseases. These diseases are mainly hypertension, diabetes mellitus, dyslipidaemia, stroke, tumours and chronic respiratory diseases, which have a common feature that they need to be managed over a long period of time. According to World Health Statistics 2021, the total number of deaths worldwide from cardiovascular disease, cancer, chronic respiratory disease and diabetes reached 17.9 million, 9.3 million, 4.1 million and 2.0 million, respectively, in 2019, and the total number of deaths from these four types of disease alone increased by 28% compared with 2000. 2020 China has released data showing that the prevalence of chronic diseases among our residents has been increasing year by year. The prevalence of hypertension and diabetes among adults aged 18 and over has reached 27.5% and 11.9% respectively. The prevalence of cancer reached 293.9 per 100,000, and the prevalence of chronic obstructive pulmonary disease (COPD) among residents aged 40 and over reached 13.6 per cent, with a significant increase in this group of data compared to 2015. Under the development trend of increasing the number of people suffering from chronic diseases, the number of deaths due to chronic diseases is also increasing, and in 2019, the number of deaths of Chinese residents due to chronic respiratory diseases, cancers, and cardiovascular and cerebrovascular diseases reached

80.7% of the total number of all deaths, and deaths due to all chronic diseases accounted for 88.5% of the total number of deaths. The number of deaths due to chronic diseases among urban and rural residents accounted for 85.3% and 85.3% of the total number of deaths, respectively. 85.3% and 79.5% of all deaths among urban and rural residents, respectively. Chronic diseases have become a major public health problem, directly affecting people's physical and mental health and placing a heavy burden on families. Faced with the serious situation of chronic disease prevention and control, China has included rational nutrition and prevention and treatment of major chronic diseases in the Healthy China Initiative (Cheng et al., 2022).

With increasing urbanisation, changes in the disease spectrum and the advent of an ageing society, chronic non-communicable diseases (NCDs), or chronic diseases for short, have become the leading cause of death and disability worldwide, with complex aetiologies, poor clinical outcomes, prolonged and persistent disease courses, a trend towards younger ages and increasing disease burden. It is characterised by complex aetiology, poor clinical outcomes, prolonged and persistent disease, younger onset and increasing disease burden. Currently, the burden of chronic diseases is becoming increasingly important. According to the World Health Statistics Report 2021, chronic diseases will account for seven of the top 10 causes of death globally in 2019, and deaths from chronic diseases will account for 73.6% of total deaths in 2019.

The World Health Organization (WHO) has released World Health Statistics 2023, which shows that the global rate of premature death and injury from noncommunicable diseases will fall from 22.9% in 2000 to 17.8% in 2023, and that the probability of people aged 30 to 69 in China in 2023 being injured by one of the four major noncommunicable diseases, namely cardiovascular diseases, morbidities, diabetes and chronic kidney diseases, will be 15.9% (nearly one in six), and the total number of people suffering from chronic diseases in China in 2023 will be 180 million. Data from China's 7th Census shows that China's population over 60 years old will reach 260 million in 2023, and research has shown that the incidence rate of chronic diseases in China's ageing population is as high as 50%, so about 130 million elderly people suffer from various chronic diseases. The rest of the population has about 50 million people with chronic diseases, making a total of 180 million people.

At present, the world's medical community has not found a systematic, scientific and effective method to combat chronic diseases, resulting in the high incidence and prevalence of chronic diseases and their serious consequences, which is also a serious dilemma facing the development of human society at present.

Studies have shown that depression is more common when associated with physical illness. A foreign meta-analysis showed that the prevalence of depression in the diabetic population is about twice that of the non-diabetic population (17.6% vs. 9.8%), and that depression increases the mortality rate of diabetic patients by 1.5–2.6 times. At the same time, depression is often co-morbid with diabetes, and a recent survey conducted by domestic scientists at the Third People's Hospital in Bengbu City showed that the prevalence of depression in combination with diabetic foot disease was high at 51.7%. A domestic survey of urban and rural residents in Dali City found that depression was common among asthma patients, with patients scoring as high as 4 on the depression scale. Recent studies have found a bidirectional relationship between depression and obesity compared to adults without mental illness. The

prevalence of obesity was almost twice as high in adults with mental illness, and obese adolescents were 1.3 times more likely to be depressed than normal weight adolescents.

Physical stress increases the risk of depression, and the prevalence of depression in patients with chronic diseases is much higher than in the general population, ranging from 3.7–6.7 per cent for major depression to 5–10 per cent for inpatients and 9–16 per cent for outpatients when depression is accompanied by physical illness. Depression affects a person's physical and psychological symptoms, reducing quality of life and contributing to public health problems such as alcohol, tobacco and drug use. Depression exacerbates existing physical conditions and leads to higher than expected mortality and morbidity, and the management of depression is important in patients with chronic diseases (Magurandam et al., 2019).

2.3. China's focus on special populations with "mental illness" and "chronic disease"

In recent years, people are paying more and more attention to physical and mental health and quality of life, especially with the implementation of the national strategy of "Healthy China", the use of music therapy as a form of "non-medical health intervention" has also received more and more attention.

Given the current serious situation of chronic disease prevention and control, China attaches great importance to the field of chronic diseases and incorporates chronic disease prevention and control into the national strategy. In 2016, the Central Committee of the Communist Party of China (CPC) and the State Council issued the Outline of the Plan for "Healthy China 2030", in which the country implements the strategy of comprehensive prevention and control of chronic diseases and realises the health management of chronic diseases for the whole population and the whole life cycle by 2030. In 2017, China formulated a detailed plan for this strategy, and the State Council issued the "Medium- and Long-term Plan for the Prevention and Control of Chronic Diseases in China (2017–2025)", which sets the development goal of "reducing the premature mortality rate of major chronic diseases", focusing on controlling chronic disease risk factors, building a supportive health environment, and promoting health and health care. It focuses on controlling risk factors for chronic diseases, building a supportive health environment, using health promotion and health management as the means, adhering to the principles of coordination, sharing, prevention and classified guidance, and promoting a shift from disease treatment to health management.

In terms of chronic disease management, China has introduced a number of specific national policies, including from the perspective of family doctor contracting, medical insurance and improving the health of the whole population. The specific strategies are as follows: first, to implement a hierarchical diagnosis and treatment system, and to prioritise the inclusion of chronic disease patients in the scope of contracted family doctor services. The contracting model establishes a long-term, stable service relationship between doctors and contracted families, and at the same time establishes health records for comprehensive, continuous tracking, analysis and monitoring of the health status of regional residents. Second, the "medical and defence integration" integrated service strategy. This mainly refers to the synergy and

integration of public health institutions, personnel, tasks and processes with clinical resources. Vigorous efforts have been made to promote county "medical communities", a close-knit management mechanism under the leadership of the government on a regional basis. Some counties have set up chronic disease management centres on a pilot basis, actively conducting comprehensive screening for chronic diseases, with the chronic disease management centres providing specialist diagnosis and treatment, follow-up consultations and health education. Third, to promote technical standards and appropriate technology. National grass-roots management institutions for hypertension and diabetes have been established, and guidelines for the prevention and treatment of hypertension and diabetes have been formulated; a tumour registration and reporting system has been set up, and screening, early diagnosis and treatment of tumours have been carried out; control of risk factors has been strengthened; and publicity and promotion of the Regulations on the Fitness of the Whole Population, the Framework Convention on Tobacco Control and the Dietary Guidelines for the Chinese People have been carried out. Fourth, the construction of protection mechanisms to meet patients' drug needs and reduce their financial burden will be strengthened. A number of drugs for chronic diseases have been included in the medical insurance catalogue, the basic drug catalogue and the scope of collective purchasing; the outpatient costs of hypertension and diabetes drugs will be paid by the coordinated fund, and the proportion of payment within the scope of the policy should reach more than 50%; and localities have introduced a long-term prescription policy for chronic diseases, so that patients with chronic diseases who meet the requirements can be prescribed the relevant drugs for up to 12 weeks at a time, and so on. Fifth, promote the "Internet + medical health" strategy. Online follow-up consultations for common and chronic diseases are allowed; doctors can issue online prescriptions for some common and chronic diseases; online service management for chronic diseases is strengthened; and medical services that meet the requirements of "Internet Plus" can be included in the scope of reimbursement under medical insurance. With the development of internet technology, coupled with the catalyst of the epidemic, the value of internet-based chronic disease management in China has become increasingly prominent and a strong complement to traditional offline healthcare (Mao et al., 2022).

In September 2020, the General Office of the Chinese Medical Commission issued a work programme for exploring special services for depression management and prevention, which requires each high school and higher education institution to include depression management screening in the content of students' health check-ups, establish students' mental health files, assess students' mental health status, and pay special attention to students with abnormal assessment results. Therefore, it is of great importance to find effective ways to improve depressed mood.

2.4. The unique effects of music therapy

Numerous national and international studies in the field of mental health have confirmed the effectiveness of therapeutic intervention practices in art, dance, music, theatre and poetry. However, much of the literature tends to focus on a single art form and a specific diagnosis of illness in the context of effectiveness research. To date, there has been little research into the similarities and differences between different

forms of art therapy practice, which has somewhat limited the understanding of the common elements of art therapy and the important principles of practice applied in therapeutic work. Against this background, in recent years there has been a proliferation of studies of art therapists collaborating and establishing cross-modal shared practice, focusing on multimodal combinations of art therapies and their application to different patient populations, such as depression and dementia. Some art therapy professional organisations have also developed relevant clinical guidelines through consensus-based approaches, developing nominal groups or other models and guidelines across multiple art therapies, such as dance therapy and music therapy.

Music therapy is a branch of psychotherapy and creative arts therapy, and the applied research of music therapy in China began in the early 1990s, to date, music kinesiotherapy has been widely used in the rehabilitation of various psychiatric and neurodegenerative diseases, mental health intervention or psychotherapy for special people, and mental health promotion for the general public and other related fields.

In recent years, music therapy has been shown to significantly improve depression management in patients with depression management. The psychotherapeutic effect of music therapy is not inferior to other modalities, with specific advantages over talk-based therapy due to its emphasis on non-verbal communication and body-oriented nature. Patients who received both music therapy and conventional medication improved their depression management more quickly than those who received conventional medication alone (Pingxin et al., 2016).

3. Literature review

Zhao et al. (2021) turned the attention of music therapy to migrant children, she designed her own music therapy programme and conducted an intervention study on some children in migrant children's schools in Chongqing Municipality.Through comparison, she concluded that music therapy can effectively improve migrant children's ability to understand social support and their level of subjective well-being.

Chung (2021) discussed the application of music therapy in the education of children with autism, combing and reflecting on the effectiveness of the educational application of improvised music therapy.

Zhang (2021) from Guangzhou University of Traditional Chinese Medicine, conducted a clinical study on heart-kidney disjunction type insomnia using moxa-braised yongquan with guqin music therapy. The study showed that the moxa-braised yongquan with guqin music group was superior to the conventional acupuncture group. It is possible to improve the problem of insomnia by using this treatment.

Li (2020) conducted an empirical study on children with autism spectrum disorders, and found that music therapy could improve the joint attention of children with autism spectrum disorders after an experimental intervention using various means of music therapy. At the 12th Academic Exchange Conference of the Music Therapy Society, Zhang Xiaomin summarised the development direction of music therapy: the research path of music therapy has been extended to the field of neurology; the research method of music therapy needs to be more scientific; the PRECIS assessment tool is of great significance in clinical treatment; music therapy has been involved in the fields of medical clinics, special education for children and geriatric rehabilitation;

new forms of art therapy have begun to be involved; and new forms of art therapy have begun to be used. New forms of art therapy are beginning to flourish.

Guo (2022) combined Orff and music therapy to study the impact of peer relationships on children with autism. By comparing pre- and post-test data from two cases, it was demonstrated that Orff music therapy can promote the development of peer relationships and improve the social interaction skills of children with autism.

Van Der Mee (2022) from the Third Military Medical University conducted an intervention study using music therapy on pain management strategies in functional exercises for burn patients.The study showed that pain management strategies using music interventions have an improving effect on pain anxiety in functional joint stretching of the extremities in burn patients.

Nowacka-Chmielewska (2022) used a combination of individual and group therapy to deliver a music therapy intervention to five patients.Through the implementation of activities, data analysis showed that music therapy effectively promoted the patients' socialisation skills, communication skills and interpersonal relationships.

Willmore (2022) from the Central Conservatory of Music conducted a case study of depression using TCM discursive thinking, using TCM discursive thinking in conjunction with Western music therapy modalities to incorporate TCM diagnostic modalities in treatment assessment. She concluded that TCM diagnosis is feasible for music therapy assessment and that music therapy can promote internal organ health through emotional intervention.

Sánchez-Hernández (2022) took the students of Tianjin Conservatory of Music as the intervention subjects and conducted a study on college freshmen's adjustment anxiety using musical rhythm, musical progressive relaxation and guided musical imagery in the receptive music therapy approach. The results proved that receptive music therapy can play a positive role in alleviating college students' anxiety and interpersonal relationships. In the same year, He intervened in two cases of college students' psychological problems with music therapy from the perspective of college students' mental health, proved the application value of music therapy for college students' mental health, and proposed and analysed how to introduce music therapy in schools.

Sedikides (2021) put forward his own viewpoint on the problem of "performance anxiety" in the performance profession, and he believes that music therapy can alleviate the anxiety, and the use of music therapy can correct the performer's cognition to a certain extent. He suggested avoidance strategies to alleviate performance anxiety.

According to a study by Jara (2021), music alters mood through a variety of neural pathways, including changes in the central amygdala and midbrain limbic dopamine system. The endocrine system in the human body is also affected by music, e.g., when we listen to upbeat, relaxing music, it usually increases our pleasant, relaxing emotional experience. Cortisol is an important part of the endocrine system. Also known as the "stress hormone", cortisol is responsible for music's ability to reduce anxiety, relieve pain and prevent disease. However, researchers and scientists disagree on the relationship between cortisol and music. It is the powerful effect of music that makes people want to use music to help them feel better. Some researchers

have argued that music should not simply be used as an emotion regulation mechanism, but should be used in empirical studies of the effects of different types of music on anxiety in college students.

The core intervention technique in the music-based pain management strategy in this study is music therapy, which is not simply listening to music, as is commonly believed. As an emerging multidisciplinary discipline, music therapy is still in a stage of continuous development and improvement, but after more than half a century of development, it has developed numerous schools and hundreds of methods. Currently, the definition of music therapy accepted by experts in the field worldwide includes that of Dr Broussard, a professor at Temple University in the United States, and that of the American Music Therapy Association (AMTA). According to Dr Bruscha, "music therapy is a systematic intervention in which the therapist uses various forms of musical experience and the therapeutic relationship that develops during therapy as the driving force of therapy to help the client achieve wellness". In addition, the American Music Therapy Association (AMTA) offers a definition that "music therapy is an evidence-based music intervention that achieves individual therapeutic goals through the formation of an intrinsic therapeutic relationship with a professionally trained and credentialed professional".

Music therapy differs from general music interventions in the following ways: First, it is systematic. Music therapy is a scientific and systematic treatment process, just like medical clinical diagnosis and treatment. It involves a systematic intervention process including comprehensive assessment, setting of intervention goals, development of intervention programmes, implementation of the intervention and evaluation of effectiveness. Second, richness. Music therapy is the use of all forms of music-related activities as means, such as: listening, singing, instrumental music, music composition, song writing, improvisation, dance, art and other various activities. Therefore, the means and methods of music therapy are very rich and can be applied to patients with different needs. Third, professionalism. The process of music therapy must include three factors: music/musical activities, the person being treated and the music therapist, and it cannot be called music therapy without any of them. In addition, the therapist must be a professionally trained and certified music therapist. Therefore, general music listening cannot be considered music therapy in the strict sense. Fourth, personalisation. The process of music therapy is highly individualised. Music is a very special kind of stimulus, and listening to it produces a variety of physiological and psychological responses. The most important of these are rhythm and melody. Rhythm triggers the development and progression of music, it is the driving force of music, and it is the most important factor to consider when choosing music. There are many rhythmic activities in the human body, such as breathing, heart rate, pace, etc. These are important rhythms in human life, and the rhythms of the human body can find similar rhythms in music. In addition, the perception of melody is the most prominent in the process of human perception of music. The melody of music can trigger emotional responses and memories in the listener. Each person's preference for music is different, and even the same piece of music will evoke different feelings in different people, which means that music therapy must be a personalised process. Moreover, music therapy develops a personalised programme based on the patient's needs and

actual musical ability, a process that is adapted to the needs of modern medicine and the development of pain management.

In therapy, music therapists use music as a tool (Music as Therapy) or as a medium (Music in Therapy) to incorporate into a variety of therapeutic goals to promote healing, manage stress, relieve pain, express emotions, improve memory, enhance communication, and promote physical healing in a variety of therapeutic settings and therapeutic processes. processes. In addition, the therapist chooses different forms of therapy according to the purpose of the therapy, the physiological condition of the patient and the therapeutic environment. Forms of music therapy include individual music therapy and group music therapy. According to the different methods of music therapy, it is also divided into receptive music therapy, recreational music therapy and improvisational music therapy (Liu et al., 2021).

4. Theory

4.1. Theory of group counselling

Group counselling as a tool is the main channel for mental health education and an effective way to influence and regulate depressive states. Group dynamics, which believes that the group atmosphere has a greater impact on the individual and society, also believes that group cohesion has an important impact on the activities of the group. Firstly, group cohesion will make the group members closely unite around certain goals and make the group a highly integrated group. Secondly, group cohesion has an important impact on the efficiency of group work. Lewin has been studying group psychology and group dynamics for a long time. Lewin and Lippitt's experimental results proved that in the group situation, the group atmosphere created by democratic leadership can improve the work efficiency. The main ideas of group dynamics theory: groups are not simply the sum of individuals; groups have the power to change individual behaviour; the dynamic role of group decision making. In his research on group cohesion, Show found that groups with high cohesion can have the following significant benefits: members can communicate more with each other; members are friendlier and more cooperative; they can exert greater influence on members; they can achieve group goals more effectively; and they generate more satisfaction for members (Yuan et al., 2007).

4.2. The principle of musical synchronisation

Modern music therapy practice still follows an ancient principle first proposed by Aristotle and later known as the principle of musical synchronisation. This means that if you want to influence and change a visitor's bad mood, you must first use music that is synchronised with the visitor's current emotional state (music that is depressed, sad, painful, angry and full of contradictory emotions) so that the music resonates with the visitor's emotions, and then gradually change the emotional characteristics of the music to gradually change the visitor's emotional state. For the client, it is a process of facing and experiencing their rich inner emotional world again, getting to know themselves anew and moving towards maturity.

This is very close to our life experience, when we are sad and depressed, we are very willing to listen to a sad piece of music or a sad song, after enough sadness and grief, the emotions will naturally and slowly recover from the bottom, they need time to recover and have their own rhythm. However, if we divert our attention and reverse our emotional state in various ways as soon as our emotions begin to appear, we will, on the contrary, delay the recovery of our low and depressing emotions.

When we listen to music, we have very rich emotional experiences and feelings. But it is not the same as the emotional reactions caused by things in our daily lives. The different types of experiential feelings in music, even if they are very intense, can easily lead us into calm and deep feelings, allowing us to achieve deeper physical and mental relaxation.

In his basic theory of music therapy, Gauthier suggests that music activates the parasympathetic nervous system rather than the sympathetic nervous system. Activation of the sympathetic nervous system leads to an increase in the body's level of physiological arousal (tension), whereas activation of the parasympathetic nervous system leads to a decrease in the body's level of physiological arousal (relaxation). Thus, while music allows one to experience a variety of complex emotional ups and downs and changes, it also allows one to enter a physiological state of relaxation. When the organism is in a musical mood state, the level of physiological arousal decreases, tension is relieved and the physiological state is at a level relatively close to homeostasis. This is the bio-adaptive function of musical emotions (Holmes et al., 2008).

4.3. The biological basis of five elements music antidepressant therapy in China

Depression belongs to the category of traditional Chinese medicine and is a common affective disorder. As early as the Yellow Emperor's Classic of Internal Medicine, the treatment of five tones was proposed to regulate the emotions. In the article "The Spiritual Pivot—Five Tones and Five Tastes" it says "The sound of Shang is resounding and solemn, which is good for restraining irritability and anger and making people peaceful; the sound of Jiao is soft and calm, which is good for dispelling melancholy and helping people to sleep". In "Su Wen-Yin Yang Ying Xiang Da Lun" it says: "Horn is the sound of wood, tonal and straight; Zheng is the sound of fire, harmonious and beautiful; Gong is the sound of earth, large and harmonious; Shang is the sound of gold, light and strong; Yu is the sound of water, deep and profound." The five tones correspond to the five elements theory of Chinese medicine. The chapter "Spiritual Pivot–Evil Guests 71" states that "the sky has five sounds, man has five organs; the sky has six rhythms, man has six bowels". Again, the five sounds are associated with the five organs. The theory of Five Sounds-Five Elements-Five Viscera of The Yellow Emperor's Classic of Internal Medicine forms the basic framework of Five Elements Music Therapy. Five Elements Music can achieve the purpose of disease prevention and treatment by improving the function of the body's internal organs. Modern research has shown that Five Elements Music Therapy can increase the levels of 5-hydroxytryptamine in the blood, monoamine oxidase in the hippocampus, and malondialdehyde in the liver tissue, thus improving depressive

behaviour in depressed animal models, which may be the biological basis for the antidepressant effect of Five Elements Music (Monzel et al., 2023).

5. Discussion and findings

5.1. Music therapy intervention in chronic disease management

By combing the literature on music therapy intervention in chronic disease management of Chinese elderly people for nearly 20 years, four physical and mental areas in which music therapy is applied in chronic disease management have been summarised: 1) improvement of physiology; 2) improvement of mood; 3) improvement of cognitive interventions; and 4) improvement of behavioural interventions. The intervention of music therapy in chronic disease management is mainly based on the improvement of physiological indicators of the chronic disease population, the improvement of information reception and processing of the chronic disease population, and the change of energy of the chronic disease population by both of them (Surov et al., 2022).

5.2. Improvement of physiological indicators through music therapy

The physiological improvements of music therapy have gradually made it an important tool in the prevention and treatment of hypertension. Substituting music intervention for drugs such as antihypertensive or coronary augmentation can promote the recovery of elderly patients with hypertension and coronary artery disease.

The physiological improvement of music therapy is also manifested in the suppression of pain during surgery and postoperative rehabilitation training, improving the effect of postoperative rehabilitation, promote the coordination of patients' physiological activities, relieve somatic stress, lower blood sugar, affect endocrine hormone levels and reduce salivary cortisol levels. It can be seen that music therapy directly improves physiological indicators of emotional state in patients with chronic diseases, thus playing a role in emotional regulation (Roberts et al., 2022).

Rhythmic auditory stimulation interventions using music therapy can significantly increase the patient's stride length on the affected side, decrease the difference in stride length between the healthy side and the affected side, increase stride frequency, and increase walking speed, thus improving walking ability.

Researchers have hypothesised that music interventions can reduce sympathetic excitability and relieve vascular wall tension in elderly hypertensive patients, reduce myocardial oxygen consumption and cardiac load, and alleviate myocardial ischaemia and hypoxia in elderly patients with coronary heart disease, and alleviate myocardial ischaemia and hypoxia in elderly patients with coronary artery disease, and also improve sleep, or that the preoperative use of music therapy to divert attention, which will bring about an immediate decrease in blood pressure (Maule et al., 2023). Meanwhile, the choice of music in music therapy is very important, with reference to the psychological characteristics and special life experiences of patients, and requires experienced music therapists to select and guide the repertoire according to the patient's specific situation.

5.3. Improving cardiovascular disease indicators with music therapy

Cardiovascular disease and depression interact, and comorbid depression is more common in post-MI patients, and the risk of CVD is significantly increased in patients with depression Music, as a sound signal, is converted into a neural signal at the cochlea via the auditory nerve, which is uploaded to the midbrain and cochlear nucleus, eventually reaching the auditory thalamus and amygdala; nerve fibres originating from the central nucleus of the amygdala directly reach the cardiovascular regulatory centre in the ventral lateral medulla oblongata, The existence of the above pathways may provide control of cardiovascular reflexes, thus influencing the endocrine system to play physiological roles, such as influencing the secretion of epinephrine and norepinephrine, and further on local cardiac activity, heart rate, heart rate variability, blood pressure and regulation of respiratory rate; slow and regular breathing guided by listening to music may affect nitric oxide concentration in the blood, resulting in a decrease in respiratory rate and blood pressure in hypertensive patients (Lyu et al., 2022).

5.4. Improving indicators of postpartum depression with music therapy

Postpartum depression is usually a psychiatric syndrome in which a woman experiences significant depressive symptoms or typical depressive episodes during the puerperium. The prevalence of postpartum depression is 10–20 per cent, but can be as high as 30 per cent in some areas. Symptoms of postpartum depression include mood instability, sleep disturbances, loss of appetite, weight loss, apathy, cognitive impairment and, in severe cases, suicidal thoughts. Postpartum depression not only threatens the health of the mother, but also affects the physical and mental health of the baby. Postpartum depression can lead to chronic or recurrent episodes of depression, placing a heavy burden on the caregivers of postpartum mothers (Lone et al., 2020). Although antidepressants and psychotherapy are commonly used to alleviate depressive symptoms, efficacy is associated with poor medication adherence, and antidepressants may have adverse effects on mother and child during pregnancy and lactation; mothers suffering from postpartum depression may forgo antidepressant medication to avoid adverse effects on the infant. Some studies have shown that music therapy is a special language that is effective in reducing negative emotions and improving physical symptoms (Xia et al., 2021).

5.5. Improvement in cancer and chronic pain indicators with music therapy

A meta-analysis of 94 interview studies showed that 30–40% of cancer patients may suffer from psychological distress due to anxiety and depression, and that these reactions are closely related to factors such as cancer diagnosis and disease progression, which may further affect treatment adherence, quality of life, self-healing ability and overall survival of cancer patients. In addition, cancer causes severe pain, which can greatly hinder the improvement of depressive symptom (Thorslund et al., 2020). In palliative care for cancer patients, music therapy is an effective and commonly used non-pharmacological approach to managing pain symptoms; music can upregulate plasma endorphin levels in the body, which are endogenous opioid

peptides that produce a strong analgesic effect. Music intervention is effective in improving depression and pain symptoms in cancer patients and can improve the overall quality of life of cancer patients, with a reasonable intervention duration of 1–2 months observed (Jain et al., 2018).

6. Conclusion

The overall goal of music therapy is to reduce behavioural and psychological symptoms in people with chronic illnesses and to reduce the burden on carers and the healthcare system. For patients with chronic illness, it is important to understand whether improvements in depressive symptoms translate into more realistic outcomes, such as improvements in quality of daily life and life satisfaction. Given the late start of music therapy-related education and training in China as a whole, this paper presents the research background and current development of music therapy to provide healthcare professionals with a deeper understanding and acceptance of the music therapy concept. On this basis, it introduces the significance of music therapy, the purpose of the study and the difficulties of the study, clarifies the scope of the study of music therapy in China, as well as the related concepts of basic biological theories, and analyses in depth the research on the application of music therapy in China to alleviate the symptoms of depression in chronic diseases. The positive effects of music therapy are reflected in the significant reduction of depressive symptoms, and active attention to depressive symptoms in patients with chronic diseases will have beneficial effects on their cognitive function, quality of daily life, and even prognosis. Despite the many limitations of this study, the results are still informative for clinical practice. It is hoped that more multi-centre, large-sample, high-quality clinical trials will be conducted in the future to provide more evidence-based support for further research into the effectiveness of music therapy in the treatment of depression, and ultimately contribute to the deepening and development of research in this field.

Conflict of interest: The authors declare no conflict of interest.

References

Ai, S., Zhang, J., Zhao, G., et al. (2021). Causal associations of short and long sleep durations with 12 cardiovascular diseases: linear and nonlinear Mendelian randomization analyses in UK Biobank. European Heart Journal, 42(34), 3349–3357. https://doi.org/10.1093/eurheartj/ehab170

Cheng, Z., Ping, Z., Wing, W., & Min, P. (2022). Effects of dance therapy movement experience on psychological state of depressed patients. Chinese general practice (TCM), (12),2138–2142. https://doi.org/10.16766/j.cnki.issn.1674-4152.002788

Chung, F., Waseem, R., Pham, C., et al. (2021). The association between high risk of sleep apnea, comorbidities, and risk of COVID-19: a population-based international harmonized study. Sleep and Breathing, 25(2), 849–860. https://doi.org/10.1007/s11325-021-02373-5

Expert Group on Prevention and Control of Novel Coronavirus Pneumonia, Chinese Preventive Medical Association. (2020). Update on the epidemiological characteristics of novel coronavirus pneumonia. Chinese Journal of Viral Diseases, (02), 86–92. https://doi.org/10.16505/j.2095-0136.2020.0015

Holmes, A. J., & Pizzagalli, D. A. (2008). Response conflict and frontocingulate dysfunction in unmedicated participants with major depression. Neuropsychologia, 46(12), 2904–2913. https://doi.org/10.1016/j.neuropsychologia.2008.05.028

Jain, F. A., & Fonagy, P. (2018). Mentalizing Imagery Therapy: theory and case series of imagery and mindfulness techniques to understand self and others. Mindfulness, 11(1), 153–165. https://doi.org/10.1007/s12671-018-0969-1

Jara, L. J., López-Zamora, B., Ordoñez-González, I., et al. (2021). The immune-neuroendocrine system in COVID-19, advanced age and rheumatic diseases. Autoimmunity Reviews, 20(11), 102946. https://doi.org/10.1016/j.autrev.2021.102946

Li, G., Cai, X., Yang, Q., et al. (2022). A review of attentional bias modification trainings for depression. CNS Neuroscience & Therapeutics, 29(3), 789–803. https://doi.org/10.1111/cns.14022

Li, Y., Qin, Q., Sun, Q., et al. (2020). Insomnia and psychological reactions during the COVID-19 outbreak in China. Journal of Clinical Sleep Medicine, 16(8), 1417–1418. https://doi.org/10.5664/jcsm.8524

Liu, X., Liu, Y., Shi, H., et al. (2021). Regulation of Mindfulness-Based Music Listening on Negative Emotions Related to COVID-19: An ERP Study. International Journal of Environmental Research and Public Health, 18(13), 7063. https://doi.org/10.3390/ijerph18137063

Lone, Z., Hussein, A. A., Khan, H., et al. (2020). Art Heals: Randomized Controlled Study Investigating the Effect of a Dedicated In-house Art Gallery on the Recovery of Patients After Major Oncologic Surgery. Annals of Surgery, 274(2), 264–270. https://doi.org/10.1097/sla.0000000000004059

Luan, F., & Li, J. (2011). A study on the impact of the novel coronavirus pneumonia epidemic on the mental health of university students. Psychology Monthly, (17), 56–57,60. https://doi.org/10.19738/j.cnki.psy.2020.17.018

Lyu, J. (2022). Analysis of the Effect of Different Types of Colors on Human Behavior and Emotion. Advances in Social Science, Education and Humanities Research. https://doi.org/10.2991/assehr.k.220704.191

Magurandam, Liu, J., Chen, Z., & Zhao, Q. (2019). Effects of Dance Therapy on Interpersonal Skills and Emotions of College Students. Journal of Shanghai Institute of Physical Education, (02), 86–90,96. https://doi.org/10.16099/j.sus.2019.02.012

Mao, Q., Mastenack, W. & Qian, Y. (2022). An intervention study of dance therapy combined with music therapy to improve college students' dysphoria—A preliminary study of the establishment of a model and efficacy of a diverse combined expression therapy. Journal of Beijing Dance Academy, (4), 132–139.

Mastenack,W., & Qi, M. (2021). A review and evaluation of dance therapy. Journal of Beijing Dance Academy, (01),111–120.

Maule, J., Skelton, A. E., & Franklin, A. (2023). The Development of Color Perception and Cognition. Annual Review of Psychology, 74(1), 87–111. https://doi.org/10.1146/annurev-psych-032720-040512

Monzel, M., Agren, T., Tengler, M., et al. (2023). Imaginal extinction without imagery: Dissociating the effects of visual imagery and propositional thought by contrasting participants with aphantasia, simulated aphantasia, and controls. Psychophysiology, 60(9). https://doi.org/10.1111/psyp.14271

Nowacka-Chmielewska, M., Grabowska, K., Grabowski, M., et al. (2022). Running from Stress: Neurobiological Mechanisms of Exercise-Induced Stress Resilience. International Journal of Molecular Sciences, 23(21), 13348. https://doi.org/10.3390/ijms232113348

Ping,X., Zhu, X., & Guo, F. (2016). Rethinking theories and methods of transpersonal dance therapy. Journal of Beijing Dance Academy, (01),73–79.

Roberts, S. O., & Mortenson, E. (2022). Challenging the White = Neutral Framework in Psychology. Perspectives on Psychological Science, 18(3), 597–606. https://doi.org/10.1177/17456916221077117

Sánchez-Hernández, M. D., Herrera, M. C., & Expósito, F. (2022). Does the Number of Likes Affect Adolescents' Emotions? The Moderating Role of Social Comparison and Feedback-Seeking on Instagram. The Journal of Psychology, 156(3), 200–223. https://doi.org/10.1080/00223980.2021.2024120

Sedikides, C. (2021). Self-Construction, Self-Protection, and Self-Enhancement: A homeostatic model of identity protection. Psychological Inquiry, 32(4), 197–221. https://doi.org/10.1080/1047840x.2021.2004812

Su, L., Fan, Z., Qu, Y., et al. (1993). A study on the efficacy of music and dance therapy for chronic schizophrenic patients. In: Proceedings of the Third Academic Exchange Conference of the Chinese Society of Music Therapy. pp. 38–45.

Surov, I. A. (2022). Quantum core affect. Color-emotion structure of semantic atom. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.838029

Thorslund, J., McEvoy, P. M., & Anderson, R. A. (2020). Group metacognitive therapy for adolescents with anxiety and depressive disorders: A pilot study. Journal of Clinical Psychology, 76(4), 625–645. Portico. https://doi.org/10.1002/jclp.22914

van der Mee, D. J., Gevonden, M. J., Westerink, J. H. D. M., et al. (2022). Cardiorespiratory fitness, regular physical activity, and autonomic nervous system reactivity to laboratory and daily life stress. Psychophysiology, 60(4). https://doi.org/10.1111/psyp.14212

Willmore, L., Cameron, C., Yang, J., et al. (2022). Behavioural and dopaminergic signatures of resilience. Nature, 611(7934), 124–132. https://doi.org/10.1038/s41586-022-05328-2

Xia, G., Li, M., Henry, P., et al. (2021). Aroused and Impulsive Effects of Colour Stimuli on Lateral and Logical Abilities. Behavioral Sciences, 11(2), 24. https://doi.org/10.3390/bs11020024

Yuan, J., Li, H., Chen, A., et al. (2007). Neural correlates underlying humans' differential sensitivity to emotionally negative stimuli of varying valences： an ERP study. Progress In Natural Science, 17, 115–121.

Zhao, Y., Guo, J., Liu, S., et al. (2021). Prevalence and related factors of depression, anxiety, acute stress, and insomnia symptoms among medical staffs experiencing the second wave of COVID-19 pandemic in Xinjiang, China. Frontiers in Public Health, 9. https://doi.org/10.3389/fpubh.2021.671400