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Effects of Dance Movement Therapy and Other Dance- Based Interventions on Depressive Disorders

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Abstract

Introduction: Depression is a medical condition affecting hundreds of millions of people worldwide. It can affect different age groups, both children and the elderly. The principal treatments for depression are pharmacotherapy based mainly on SSRIs and SNRIs and psychotherapy (e.g. cognitive-behavioural). Researchers are looking for interventions that can support the treatment of depressive disorders and complement primary therapy. One of the

issues being explored is the impact of Dance Movement Therapy and other dance- based interventions on depressive symptoms and general well-being.

Aim of the study: Analysis of the available research on the effects of Dance Movement Therapy and other dance- based interventions on depressive symptoms and general psychological well-being including anxiety and stress symptoms.

Methods: Review of the available literature available in the scientific databases PubMed and Google Scholar by searching with key words such as: dance movement therapy, dance, depression, depressive disorders, stress. In addition, a review of specialised literature from the field of psychiatry was performed.

Conclusion: According to the available data, the introduction of DMT or other forms of dance generally has positive effects, alleviating depressive symptoms in many study groups. In some trials, a reduction in anxiety and stress was also noted among those who underwent the intervention. The best effects of the therapy have been found among people with mild depression. The effects among people with severe depression are not as clear. The inclusion of dance in people with depressive disorders is likely to be a good intervention in patients with mild depressive symptoms and can be used as an adjunctive therapy to appropriate psychiatric treatment. The positive effects of DMT and dance on the wellbeing of cancer patients have also been noted.

Key words: dance movement therapy, dance, depression, depressive disorders

Introduction

Mental health is one of the most important factors affecting human well-being. There are many factors that can disturb an individual's mental balance and cause depressive disorders. These may include individual characteristics such as difficulties in dealing with one's own feelings or difficulty in social interaction, neuroticism, individual genetic predisposition, female gender, changes in brain structure, inflammatory process (so-called inflammatory theory), disorders of the hypothalamic-pituitary-adrenal axis, neurotransmission disorders, heart and lung diseases, diabetes, accompanying chronic pain and factors such as poverty, difficulties at work, natural disasters, other random events (e.g. sudden oncological illness), death of a parent or other loved one, moving house and many other negative stimuli and events that a person may face. Stressful situations are a common factor that induce the onset of depressive disorders. Depression may be accompanied by anxiety disorders and even obsessive-compulsive disorder [1,2,3].

Symptoms of depression include lowered mood, low self-esteem, poor self-perception, feelings

of fatigue, reduced concentration, sleep problems (insomnia or excessive sleepiness), suicidal thoughts, the belief that nothing good will happen, accompanying feelings of guilt, increased or decreased appetite, psychomotor retardation and many other less characteristic symptoms (e.g. agitation). The aforementioned symptoms result in reduced functioning, impaired school performance and work-related problems, difficulties in family life, loss of interests. [2,4].

Pharmacological treatment is the main and effective treatment for depression and is based on the use of drug groups of selective serotonin reuptake inhibitors (SSRIs), serotonin norepinephrine reuptake inhibitors (SNRIs), monoamine oxidase inhibitors, the now rarely used tricyclic antidepressants (TCAs) and other drug groups and substances. Other therapies used to treat depression include electroconvulsive therapy, phototherapy (used to treat seasonal affective disorder) and psychotherapy (most commonly cognitive-behavioural psychotherapy) [2,3].

Epidemiology

The Polish EZOP study, which aimed to investigate the epidemiology of psychiatric disorders according to the DSM-IV classification and access to psychiatric care in the 18-64 age group, found that the prevalence of major depressive disorder in this population was 3.0% (95% CI 2.7-3.3) and was statistically significantly more common in women than in men (4.0% vs. 1.9%), ($p<0.01$). This study found that women over 50 years of age were most likely to have major depressive disorder. Minor depressive disorder, on the other hand, had a prevalence of 0.4 % (95% CI 0.3-0.5) in this population, indicating a low frequency of this condition in this population [5]. According to the World Health Organisation (WHO), more than 300 million people worldwide suffer from depression. Globally, as in the Polish analysis, women are more likely to develop depressive disorders than men (5.1% vs. 3.6%) [6].

Dance Movement Therapy

Dance Movement Therapy in short DMT is a type of psychotherapeutic intervention that combines movement and dance [7]. Movement enables emotional expression, which has a positive impact on maintaining mental and physical health. DMT involves a holistic approach to the patient, as the intervention is designed to affect both body and mind [8].

Methodology

The review was based on publications available in PubMed and Google Scholar databases. A literature search was performed using keywords such as dance movement therapy, depression, depressive disorders and dance.

Throughout the literature review, we paid most attention to studies with high scientific value

such as meta-analyses and randomised controlled trials (RCTs). We mainly focused on studies investigating the effects of Dance Movement Therapy on depressive disorders, but we also reviewed other dance-based interventions such as Zumba, tango or local folklore dances.

Effect of dance on patients with depression

Researchers from Finland conducted a study on people between the ages of 18 and 65 with physician-diagnosed depression who had been in treatment for a minimum of three months. In addition to continuing standard psychiatric treatment, the research group attended Dance Movement Therapy (DMT) classes at a frequency of twice a week for a 10-week period. To assess the patients' symptoms, they used, among others, the Beck Depression Inventory (BDI), which is a popular questionnaire among doctors, psychologists and psychotherapists in the assessment of depressive symptoms. After the intervention, there was a reduction in BDI scores by an average of 7.64 points compared to the control group, indicating a reduction in depressive symptoms among the experimental participants [9]. In another similar study, participants with doctor-diagnosed depression aged between 18 and 64 years were implemented DMT in the form of 20 sessions at a rate of two sessions per week, in addition to standard psychiatric treatment. Symptoms were also assessed using the aforementioned BDI scale. The best results were obtained among participants with mild depression, as after the intervention some participants had a score that did not correspond to the values attributed to depression in the BDI, but it should be noted that these patients had, on average, a lower BDI scale score before the experiment. The rest of the patients with higher scores, but still corresponding to mild depression, also experienced significant improvement, although less spectacular. Among the participants with severe depression, scores corresponding to moderate depression on the BDI were obtained after the intervention, which also means that they improved. The data obtained suggest that DMT may be of greatest benefit in people with mild depression with low-intensity symptoms, while the effects in people with severe depression are less satisfactory [10]. Scientists from the University of Heidelberg published a study in which they tested the effectiveness of Joy Dance in patients with depression diagnosed according to ICD-10 criteria on their symptoms and patients' mood, and compared the effects of dance with interventions such as listening to music and cycling ergometer exercises. The dance group performed a dance in a circle to the song ‘Hava Nagila’, while the music group listened to the same song while sitting and doing no physical activity, and the cycle exercise group trained until their heart rate reached 120 beats per minute. The Joy Dance group had the best results, followed by the cycloergometer training group. The group listening to music recorded no significant changes.

Depressive symptoms were assessed on the Heidelberger Befindlichkeitsskala (HBS), by the difference in the scale score before and after the intervention, which showed that the Joy Dance group had a decrease in depressive symptoms, increased vitality and increased positive affect [11]. In a study entitled 'Emotions in motion', which involved patients diagnosed with depression, DMT was applied at the rate of two one-hour workouts per week for a period of 10 weeks. The use of DMT led to a statistically significant alleviation of depressive symptoms as measured by the BDI compared to the start of the intervention and a reduction in anxiety on the Hospital Anxiety and Depression Scale (HADS). The above data suggest that DMT is effective, but further research is required to answer the question of whether the positive effect is sustained in the long term [12]. An interesting study comparing the effectiveness of tango and mindfulness in relieving symptoms such as depression, stress and anxiety has been published. Both interventions lasted six weeks and involved one and a half hour classes once a week. The majority of study participants were women who reported symptoms of depression, anxiety and stress, and these parameters were assessed before and after the intervention using the Depression Anxiety Stress Scale - 21 Items (DASS-21). A statistically significant antidepressant effect was noted in both study groups, while tango was more effective in reducing feelings of anxiety and stress among study participants [13].

In a meta-analysis of the effects of DMT on adults with depression, it was shown that all studies reviewed showed a reduction in depressive symptoms after DMT. The Standardised Mean Difference (SMD) for this meta-analysis is 1.10 (95% CI 0.40, 1.80), while the heterogeneity $I^2 = 89\%$, indicating that DMT had a positive effect on reducing depressive symptoms among study participants. After 3 months, SMD= 0.69 (95% CI: 0.37-1.02) and I^2 heterogeneity = 14%, showing that the positive antidepressant effect still persisted and was statistically significant [14]. Different results were obtained in a meta-analysis conducted by Australian researchers, as dance training was not shown to be superior to other physical activities (e.g. aerobic training) in reducing depressive symptoms in the BDI, but research is warranted as dance is likely to have a beneficial effect on depressive symptoms [15].

Dancing among the geriatric population

The geriatric population is at particular risk of developing depression. The occurrence of this psychiatric disorder in the senior population increases the risk of falls, predisposes to functional decline and limits social activity. Depressive disorders may also be a consequence of having suffered a stroke, which slows down the rehabilitation and return to normal functioning of these patients and is even a factor that increases the risk of death [16]. It is estimated that depressive

disorders occur in up to 15% of people over 65 years of age. It is recognised that depressive symptoms in the elderly, may herald a dementia [3]. A meta-analysis, where the mean age of participants was 80 years and participants were healthy, examined the impact of dance training using the StepMania game. For training, participants used an electronic pressure-sensitive dance mat. During the workout, arrows were displayed on the screen, indicating where to place the next step. In the context of depressive symptoms, the SMD of this meta-analysis was -0.06 (95% CI -0.59 to 0.47; P = 0.83), with a heterogeneity of $I^2 = 61\%$, showing that this training had no clear benefit in alleviating depressive symptoms in the elderly population. As healthy seniors without a diagnosis of depression were assessed, the results of this meta-analysis cannot be interpreted in relation to people with a medical diagnosis of depression [17]. In another meta-analysis of the effects of dance training and different types of dance on depressive symptoms in a group of older people, most studies estimated depressive symptoms using the Geriatric Depression Scale (GDS) and the Beck Depression Inventory (BDI). The meta-analysis showed that dance interventions in seniors resulted in a reduction in depressive symptoms SMD = -0.65 (95% CI: -1.12 to -0.17; $p < 0.01$), especially in a population without comorbidities. Unfortunately, no positive effects on depressive symptoms were shown in the population with Parkinson's disease and mild cognitive impairment [18].

An experiment was conducted on nursing home residents over the age of 60, which involved the implementation of an hour-long dance workout based on dances such as waltz and cha- cha once a week for a period of three months. Symptoms of depression were assessed using the GDS scale. After three months of intervention, there was a statistically significant improvement in depressive symptoms, which was not observed in the control group [19]. On a study group of mild to moderate cognitively impaired elderly aged between 60 and 80 years, an intervention was carried out to include training in Indonesian folk poco- poco dance and relaxation exercises at a frequency of twice a week for 6 weeks. Following the intervention, the study group experienced a statistically significant reduction in anxiety and depressive symptoms as measured by the Hospital Anxiety and Depression Scale (HADS) [20]. A meta-analysis of five studies on people with mild cognitive impairment or dementia, where the effects of different dance interventions on these populations were examined, showed that dance-based interventions resulted in a reduction in depressive symptoms compared to control groups SMD = -0.42 (95% CI: -0.60, -0.23, $p < 0.0001$) . In contrast, no effect of dance on anxiety symptoms was observed and a greater antidepressant effect was obtained in the dementia group. Unfortunately, making strong conclusions requires further research and the use of larger study

groups [21]. In a meta-analysis of studies on a population of people with mild cognitive disorder, it was found that the implementation of dance therapy was effective in reducing depressive symptoms compared to controls who did not perform this physical activity with SMD = - 0.49 (95% CI: -0.77, - 0.21) with I^2 heterogeneity = 74.3% ($p < .001$), and the results of the statistical analysis indicate that this intervention was effective, but further research is required [22].

American researchers from the University of Nevada, conducted a survey that evaluated the effect of 8 ballroom dance lessons on depression in a population of seniors. Among the study participants, 21% were taking antidepressant medication and 62% had a history of psychiatric treatment. Scales such as the Hamilton Rating Scale for Depression, GDS and Symptom Checklist- 90- Revised (SCL-90R) were used to assess symptoms of depression. No statistically significant effect of ballroom dancing on depressive symptoms was found, which may have been related to the small intervention group of 20 people and the short intervention period [23].

Turkish researchers tested the effectiveness of an 8-week Turkish folk dance programme among older women. Unfortunately, no significant differences were observed before and after the intervention on the GDS scale and there were no significant differences between the study and control groups, indicating that this dance training had no effect on depressive symptoms [24].

Dancing among the adolescent and young adult population

Depressive disorders are a serious health problem among adolescents and young people. Providing appropriate psychiatric help and controlling the symptoms of depression is very important, as untreated depression can even lead to suicide. Unfortunately, a large proportion of children do not receive such specialised care. This is very worrying, as childhood is the time when a person's social competence develops and disorders such as anxiety and depression can impair this complicated process [25].

Swedish researchers conducted a randomised controlled trial on a group of 112 girls with a mean age of 16 years, who reported high levels of stress and the presence of somatic symptoms such as headaches and abdominal pain. The research group trained twice a week in dance for a period of 8 months and symptoms were assessed before the implementation of training, consecutively at 8 months after the start and then at 12 and 20 months. Only at 12 months was there a difference between the research group and the control group, which had no intervention applied. A statistically significant reduction in emotional distress and somatic symptoms was obtained. Based on the results of this study, there is no measurable effectiveness of dance training on depressive and anxiety symptoms among girls [26]. In another population of girls with high BDI scores, a shorter,12-week DMT training plan with a frequency of 3 times per

week, resulted in improved scores on the SCL-90-R scale, including the subscale assessing depressive symptoms (DEP) after 12 weeks and compared to the control group. Most interestingly, this study assessed the effect of DMT on levels of neurohormones such as serotonin, dopamine and cortisol. In the study group, there was a significant increase in dopamine and serotonin levels after the experiment, which may have improved mood in DMT participants [27].

An observational study was conducted among Chinese students to test the effects of dance classes on psychiatric disorders such as anxiety and depression. Students who regularly attended sports dance (a minimum of four times a week for 90 minutes per workout) had statistically significantly lower levels of depression than non-frequent sports dance students who only practised the sport occasionally. Regular dance training was associated with lower depressive symptoms as estimated by the Patient Health Questionnaire-9 (PHQ-9). Although further research is indicated, it is likely that attending sports dance is an appropriate form of exercise among students that may carry physical and mental health benefits [28]. In another study on a population of students without physician-diagnosed depression, a 12-week dance programme with elements of rumba and waltz, among others, resulted in a decrease in the mean BDI score from 15.72 to 13.90, indicating a reduction in depressive symptoms [29].

In a population of Chinese adolescents with depressive symptoms, an 8-week dance training based on the Satir model was applied, which also included a psychological intervention. After completion, participants in the research trial achieved a reduction in depressive and anxiety symptoms compared to before the experiment and compared to a control group that did not take any intervention with statistical significance. This indicates the effectiveness of combined therapy with dance based on the Satir model [30].

In 2024, a meta-analysis was published evaluating mind-body therapies for depressive symptoms in adolescents. Activities such as dance therapy, yoga, tai chi and mindfulness, among others, were evaluated. Dance therapy was the second most effective method, after yoga, in reducing depressive symptoms among adolescents. This suggests a rationale for further research using larger study groups on dance therapy in adolescents with depressive symptoms, as it is a potentially effective and safe adjunctive treatment method [31].

Depressive disorders among oncology patients

Depression is a very serious health problem among oncology patients, as there are scientific studies saying that there is a higher mortality rate among oncology patients with depressive

symptoms. This shows how important it is in comprehensive oncological treatment to take care of the patient's mental sphere [32].

The use of DMT was tested among groups of oncology patients, who are obviously exposed to high emotional stress. In a study of the effects of DMT on breast cancer patients currently undergoing radiotherapy and on patients who had undergone radiotherapy in the past, it showed that the therapy had good effects, resulting in a reduction in feelings of stress and relaxation. The participants also showed a more positive attitude towards life and treatment. Positive effects of the therapy were obtained by the participants of both groups [33]. Lebed-based dance and rehabilitation training, applied over a 12-week period among women following breast cancer surgery, resulted in an increase in the 36-Item Short Form Survey (SF-36) questionnaire score by an average of 5 points 26 weeks after the start of the intervention, suggesting a significant improvement in psychological well-being ($P = 0.006$) and an improvement in the mental state of these women [32].

Among breast cancer patients undergoing radiotherapy, the inclusion of DMT for a period of 3 weeks at a frequency of twice a week resulted in a statistically significant reduction in stress on the Perceived Stress Scale (PSS) compared to the control group, which scored an increase in stress. Unfortunately, in the context of depressive symptoms and perceived anxiety, no statistically significant changes were observed [34]. In another group of women with breast cancer undergoing radiotherapy, the effect of 3-week DMT on salivary cortisol levels and its daily secretion rhythm was analysed. Saliva was sampled five times during the day - upon waking, 45 minutes after waking, at 12 noon, at 5 pm and before going to sleep. However, there were no statistically significant differences in cortisol levels between the test and control groups. There was a reduction in stress levels on the Perceived Stress Scale (PSS) in the group performing DMT, compared to the score before DMT was included, which was statistically significant ($B = -1.81$, 95% CI = -3.07 to -0.51, $\beta = -0.21$). The results suggest that female participants with higher levels of stress at the start of the intervention, score a greater decrease in cortisol during the day after DMT implementation, which was not observed in women with lower levels of stress, but learning the full impact of DMT on cortisol and its secretion requires further research on large study groups [35].

In 2017, the results of the RHYTHM project, which involved the implementation of ballroom dancing in female cancer survivors and their partners, were published. It showed, among other things, improvements in mental health in survivors undergoing the intervention with statistical significance ($p=0.04$) and improvements in their vitality. Partners of survivors did not benefit

as significantly from participation. However, the impact of ballroom dancing on cancer survivors requires further research on larger groups [36].

Peri-menopausal women

Perimenopausal women are at higher risk of developing depression, due in part to hormonal changes in the brain that are not fully understood and studied, so diagnosis and prevention of depression in this population is very important [37]. A study published in 2016 investigated whether square dance could reduce depressive symptoms in perimenopausal women. Women had weekly 5 square dance workouts over a 3-month period. Participants completed the Zung Self- Rating Depression Scale (SDS) to assess the severity of depressive symptoms. After 3 months, there was a reduction in the mean SDS scale score from 0.45 ± 0.10 to 0.43 ± 0.09 with statistical significance, indicating an alleviation of depressive symptoms in the study group after 3 months of exercise [38].

Use of dance in other groups

Among young female patients diagnosed with fibromyalgia, the effectiveness of Zumba training on the various health symptoms faced by these patients was assessed. One of the aspects studied was depressive symptoms. Some of the patients were treated with Zumba dancing for 12 weeks, with training three times a week and lasting one hour. These patients achieved a reduction in depressive symptoms meeting the conditions for statistical significance ($t = 9.37$; $p = 0.001$), and Zumba dancing appeared to be a more effective intervention than aerobic exercise or no intervention at all in terms of reducing depressive symptoms on the Beck Depression Inventory-II (BDI-II). In the Zumba dancing group, there was a reduction in BDI-II scores by an average of 11.9 points, while in the aerobic exercise group, the average BDI-II score decreased by 7.8 points, indicating that Zumba was more effective and women with fibromyalgia may benefit from training in it [39].

An interesting study was published where an 8-week African Circle Dance (ACD) programme was used among internally displaced persons (IDPs) living in camps in Nigeria. They showed depressive and anxiety symptoms and were under high stress, as tested with the Depression Anxiety Stress Scale (DASS-21). In addition to dance, psychoeducation was implemented among participants in the research group, while the control group only received psychoeducation. The results indicate that both groups benefited from a reduction in depressive symptoms, anxiety and stress, but the reduction in depressive symptoms and stress levels was greater in the research group. Anxiety symptoms decreased comparably in both groups. The results of the experiment are promising [40].

Conclusion:

Depressive disorders are a very serious public health problem in today's medicine. In addition to the established psychiatric treatment, based on effective pharmacotherapy and psychotherapy, it is worthwhile to look for interventions that may carry the additional benefit of reducing depressive and anxiety symptoms and generally improving patients' mood. Dance Movement Therapy (DMT) and other dance-related activities have been regularly tested for many years among different groups of people with depressive disorders or diagnosed depression. A number of studies and meta-analyses indicate that dance can effectively support the treatment of patients, but it is likely to be a more effective intervention in patients with less severe symptoms. The therapeutic effects in the severe depression group are not as optimistic as in the mild depression groups. The use of dance, in addition to its positive effects on psychiatric symptoms, can encourage patients to become active. Group workouts are a good opportunity for social interaction, which is often impaired in this group of patients. A wide age group of patients can benefit from dance exercise. This suggests that dance may be a universal method to support treatment. However, there is a need for further research, as there is a deficit of trials on representative, large groups. Much of the research cited, is based on short-term implementation of the intervention and evaluation of effects immediately after the end of the intervention, which does not show how long-term an effect can be achieved. DMT has the potential to be a widely used therapeutic option, as many studies have shown its effectiveness. It has the advantage of being minimally invasive and safe, but before widespread implementation of this activity, it should be investigated on representative groups what form of dance training and in what periodisation would be the most optimal and non-burdensome.

The use of dance among patients undergoing oncology treatment appears to be an effective method of improving patient wellbeing, which may have a potentially positive impact on overall treatment outcomes and prognosis. Although further research is also needed in this area, the current results are positive and it is likely that DMT and dance-based training can carry a positive impact on patient wellbeing, which is extremely important in this patient group.

Disclosure:

Author's contribution:

Conceptualization: Anita Ptak, Michał Szyc

Methodology: Michał Szyc, Anita Ptak

Software: Michał Szyc

Check: Anita Ptak

Formal analysis: Michał Szyc, Anita Ptak

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