

Effectiveness of Exercise Therapy for Management of Depressive Symptoms among Schizophrenia Patients: A Mini Review

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Abstract

The purpose of the current paper is to examine the effectiveness of evidence-based practices related to use of exercise as an intervention for management of depressive symptoms among patients with schizophrenia. For the purpose of this paper, the available evidences were extracted utilizing rigorous scientific literature review. The researcher suggests that exercise therapy could be helpful to support depressed patients with schizophrenia. Recommendations for application of exercise therapy for depressed patients with schizophrenia were highlighted.

Keywords: *Exercise Therapy; Depressive Symptoms; Schizophrenia Patients*

Introduction

In order to deliver clinically effective mental health care, it is essential for mental health care professionals to promote, utilize, and implement the evidence-based practice rather than tradition. The use of evidence-based practices in the provision of mental health care for adults has contributed significantly to the advancement of knowledge in the treatment and prevention of mental health disorders. A major drive for evidence-based practice is the need to increase the effectiveness of mental health practices with clients using standardized interventions based on rigorous scientific research [1,2].

The purpose of the current paper is to examine the effectiveness of an evidence-based practice related to use of exercise as an intervention in the management of depressive symptoms among patients with schizophrenia based on the available evidences and rigorous scientific literature review.

It is important to mention that despite using medications, psychotherapy, cognitive behavioral therapy and other nursing interventions for management of mental disorders, these disorders still ranks primarily responsible for years of life lost due to premature death or disability [3,4]. The American Association of Suicidology [5], for example, reported that about two thirds of people who complete suicide was depressed at the time of their deaths. For these reasons, there has been great interest in the development and evaluation of alternative therapies for these disorders.

Exercise has been prescribed for the treatment of a wide range of medical disorders, such as cardiovascular disease [6] and osteoarthritis [7]. In addition, exercise has a number of psychological benefits [8], and it has been suggested as a potential treatment for a variety of psychiatric conditions, especially depressive symptoms. Recently, there has been considerable research interest in the effects of exercise upon depressive outcomes [9-15].

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Mental health nurses usually express the need for applying additional effective nursing interventions that can help patients with mental disorders to enhance their mood, and cope with different symptoms related to these disorders [16,17]. This paper will examine the role of exercise as an additional therapy for patients with schizophrenia.

Methodology

Literature review of relevant articles was conducted using the PubMed and CINAHL electronic databases. Keywords included in search are: "exercise", "depression", "schizophrenia", "management", "effectiveness" and a combination thereof. Articles that were not published in English, and articles that were published since more than 20 years were excluded from review. Other articles were not included because of redundant data, and not being directly relevant to the topic of interest.

Results

The Relationship Between Depressive Symptoms and Schizophrenia

Many studies identified strong relation between schizophrenia and depressive symptoms. Depressive symptoms are indeed frequent in schizophrenia in all the illness phases [18]. According to Gorna, *et al.* [19], the rate of depression among schizophrenic patients reaches 75% in the course of psychosis. In addition, the prevalence of depression during the first psychotic episodes and psychotic relapses ranges from 65 - 80% [20].

Depressive symptoms have been associated with several negative aspects of the clinical outcomes in schizophrenia. Examples of these negative aspects are cognitive impairment, deterioration of psychosocial functioning, significant work impairment, increased relapse risk, longer hospitalization periods, poorer response to medication, chronicity and increased suicide risk, lower activity, dissatisfaction, less employment, and more psychosis than the patients with primary major depression [19,21,22].

The negative symptoms of schizophrenia overlap with the syndrome of depression in a number of important respects including diminished interest, pleasure, energy, or motivation along with psychomotor retardation and impaired ability to concentrate, cognitive and vegetative features such as pessimism, guilt, impaired concentration, lack of confidence, disturbances in sleep, appetite, and energy level [23]. In addition, post-psychotic depression and schizoaffective disorder increase the overlapping between depression and schizophrenia. Moreover, depressive symptoms may also be a psychological reaction to the illness or one of the basic features of schizophrenia [24].

Therefore, research found that exercise therapy significantly improves negative symptoms of mental state that include depressive symptoms for patients with schizophrenia [25]. Another older study by Faulkner and Sparkes [26] found that exercise therapy has the potential to reduce signs and symptoms of schizophrenia.

The Effectiveness of Exercise for Management of Depressive symptoms

Recently, research has focused on the benefits of exercise for schizophrenia patients [27-29]. Thayer, Newman, and McClain [30] found that 44% of a sample from the general population reported that exercise was the most frequently used and most effective strategy to regulate mood. This finding has been reported as evidence demonstrating the mood-enhancing effect of exercise.

Epidemiological studies have shown that physical activity is inversely related to depressive symptoms [11]. In addition, individuals who do not exercise regularly are 1.5 times more likely to become depressed than those who consistently maintain a high level of physical activity [31].

Over the past 15 years, most cross-sectional studies have reported an inverse association between physical activity and depressive symptoms. In addition, longitudinal studies reported similar findings to the cross-sectional studies cited treatment for depression [14].

Several studies compared the effectiveness exercise for management of depression with other interventions, for example, Babyak, *et al.* [31] reported that depressed patients who underwent exercise training reported significant reductions in depressive symptoms compared with patients receiving occupational therapy. Moreover, Phillips, Kiernan, and King [14] described physical activity as an alternative to drug treatments for treating depression. This is supported by Babyak, *et al.* [31] who assessed the status of 156 adult volunteers with major depressive disorder (MDD) after completion of a study in which they were randomly assigned to a 4-month course of aerobic exercise, sertraline therapy, or a combination of exercise and sertraline. The results indicated that the remitted subjects in the exercise group had significantly lower relapse rates than subjects in the medication group after 10 months of treatment.

Blumenthal, *et al.* [10] randomized patients who have depression into four conditions; supervised exercise in a group setting, home based exercise, standard antidepressant treatment (sertraline) or placebo pill for 16 weeks. At 4-month follow-up patients receiving active treatments tended to have higher remission rates than the placebo controls. All treatment groups had lower Hamilton Depression Rating Scale [32] scores after treatment. These findings are clearly relevant because many patients would prefer not to take antidepressant medication.

In one meta-analysis, exercise was not significantly different from psychotherapy, or other types of behavioral and pharmacological interventions [11]. In another meta-analysis exercise was as effective as cognitive therapy [13].

Exercise is relatively side effect free, a comparatively cheap alternative, and can be performed at the convenience of the individual, in contrast to antidepressants or psychotherapy, which is reliant on a visit to a physician or therapist. Antidepressants are known to have a latency of several weeks before taking effect, while exercise has a potential to provide immediate psychological benefits [11].

Exercise benefits may extend beyond the potential benefits for depression since exercise can also provide a range of physiological health benefits. In addition, some symptoms of depression as fatigue and reduced cognitive function not improve with antidepressant treatment. However, exercise can improve these symptoms. This may make exercise an ideal treatment for depression [11].

Exercise therapy was reported to be effective, feasible and associated with significant therapeutic benefit for persons who have depression, especially if exercise is continued over long time [31]. However, according to Tsang, Chan, and Cheung [15] in their systematic review in which the results based on 12 randomized controlled trial, physical exercises were effective in short-term effect in reducing depression levels or depressive symptoms.

Findings have supported the protective effects of physical activity on depression for different types of populations. Example of some target populations that have been studied and supported the beneficial effects of exercise on depression include adults [14], elderly [33,34], and women [9].

The dose or intensity of exercise was reported to be important. Dunn, Trivedi, Kampert, Clark, and Chambliss [35] studied the dose response relation of exercise and reduction in depressive symptoms. Participants were 80, aged 20 to 45 years, have mild to moderate depression. Participants were randomized to one of four aerobic exercise treatment groups that varied total energy expenditure. The high dose exercise group (7.0 kcal/kg/week or 17.5 kcal/kg/week and frequency 3 days/week or 5 days/week) had reported significant reduction on the 17 items Hamilton Rating Scale for Depression [32] than the group of exercise placebo control (3 days/week flexibility exercise).

Legrand and Heuze [36] assessed the effect of an eight-week aerobic exercise program where participants with elevated levels of depression (n = 23) were randomized to low frequency exercise and high frequency exercise interventions. Participants randomized to the high frequency exercise interventions reported lower depression scores than those assigned to the low frequency exercise intervention at 8-week follow-up, highlighting that the exercise and depression relationship may be dose dependent.

Using a same level of exercise, there are no differences in depression scores between participants in the individual and group based high frequency exercise groups, this may suggest that the additional effects of exercising in a group are not important in the relationship between exercise and depression [11].

Exercise is recommended also in antenatal and postnatal depression. NICE [37] recommended in their recent guidance on the management of antenatal and postnatal mental health that exercise should be considered as a treatment for women who develop mild or moderate depression during the postnatal period.

There are different explanations for mechanism of action in which exercise can enhance depressive symptoms. Examples of these mechanisms are biochemical/physiological explanations as endorphin hypothesis and psychological explanations such as association of exercise with self-esteem and self-efficacy enhancement [11].

Recommendations for Application of Exercise Therapy for Depressed patients with Schizophrenia

Before receiving exercise therapy, patients should have a physical examination by their physician to determine if they are able to participate in the identified exercises [38]. Blood pressure should be measured by standard sphygmomanometer in sitting and standing positions. Patients should also have blood tests including routine electrolytes, pregnancy and liver function tests, blood count, and thyroid stimulating hormone (TSH). If a patient was found to have any significant medical condition that would contraindicate safe participation, he or she will be excluded from participation in the study [10].

Patients can be evaluated using the 9-item Calgary Depression Rating Scale. This is a reliable and valid scale especially designed for assessment of depressive symptoms in people with schizophrenia [39]. Each item has a likert scale from 0 to 3, giving a total score from 0 - 27, with higher scores reflects more depressive symptoms [40].

Assessment of depressive symptoms can be applied twice; before and after the exercise therapy, this will help to identify difference in mean scores at baseline and after completing the suggested exercise program. To ensure patient safety and monitor symptoms severity and suicidality, it is important to monitor the patients weekly and ask them about their progress [10].

Maximum heart rate can be measured by subtracting the person's age from 220 [41], patients will be assigned training ranges equivalent to 70% to 85% maximum heart rate reserve. Each aerobic session can began with a 10-minute warm-up exercise of walking followed by 30 minutes of walking or jogging, football play, alzembrki pressure, or other exercises selected by patients at an intensity that would maintain their heart rate within the assigned training range. The exercise session concluded with 5 minutes of cool-down exercises [10]. Heart rate (radial pulse) should be monitored and recorded three times each exercise session [31].

For exercise to be a successful treatment for depression, a great deal of energy, commitment and motivation will be required from patients. Dropout from treatment is a critical factor in determining treatment success and patients need to adhere to the exercise intervention to experience therapeutic benefit. In addition, patients need to know that continued involvement in exercise after remission is an important prophylaxis in preventing relapse [11].

Daley [11] reported that although dropout from exercise programs has been identified as a concern in depressed populations, this rate is similar to, and in some cases, better than antidepressant medication to treat depression.

While the promotion of exercise has evidence of being effective, this inevitably relies on health professionals being both convinced of its merits and having the correct information about effective dosage [11]. In addition, as with any type of other treatments, patients will require regular monitoring to ensure compliance, and clinicians and health professionals will need to plan for maintenance [11].

Conclusion

The successful application of exercise therapy for schizophrenia patients who are suffering from depressive symptoms represents a step forward in research and evaluation of evidence based practice in the field of mental health. This also emphasizes the importance of application of evidence base practice in the field of mental health nursing.

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