Determine the Effectiveness of Music Therapy on the depression and Anxiety of Diabetics

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INTRODUCTION

Diabetes mellitus is a group of metabolic diseases which are characterized by high blood glucose level because of impairment in insulin secretion or insulin action or both of them. This diabetes include: type 1 diabetes or insulin-dependent diabetes mellitus (IDDM), type 2 diabetes or non-insulin dependent diabetes mellitus (NIDDM), gestational diabetes mellitus (GDM), and Diabetes mellitus which has comorbidity with other diseases. Almost 90 to 95 percent of diabetic patients are diagnosed as type 2 diabetes which occurs due to insulin resistance. The diabetes has some long-term complications which are especially more common in type 2 diabetes including retinopathy, nephropathy, neuropathy, cardiovascular diseases, dermatological diseases, etc (Brunner and Saddarth,2004).

One of the major problems in chronic diseases such as diabetes is comorbidity with psychological disorders. Depression is the most common psychological disorders that the prevalence rate of this disorder has been reported up to 25% in the general population (Kaplan et al., 1988). Because of the major problems in diabetes, especially type 2 diabetes, are seriously at risk for depression.

Anderson and his colleagues in 2001 examined the prevalence of depression in patients with diabetes via a meta-analysis and they found that the prevalence of depression in diabetics is about twice compared to non-diabetics (Anderson et al., 2001).
A study conducted by De Groot et al. (2001) revealed that there is a significant correlation between depression and diabetes complications. According to numerous conducted studies diabetic patients have a history of depression and self-pathological attitudes (WHO, 2000).

A research by Hosseini has been also shown that the prevalence of depression in diabetic people is 44%, and the intensity of depression in people who have been diagnosed with diabetes since over 10 years is more than other groups this depression can be diagnosed with physical symptoms and anxiety.

Likewise, Vaghar Anzabi found that the mean scores of anxiety, depression, aggression, and timidity in adolescents with diabetes are more than adolescents without illness and these people encounter more problems in the relationship with their family. Another major problem of these patients is anxiety, which mainly is due to fear of the unknowns, possible troubles, and consequences of it (Conley and Graham, 1971).

This is not an exception for diabetic patients. Nowadays, pharmacologic techniques are utilized to treat the anxiety which although the anxiety decreased but they are also associated with numerous complications. Nonpharmacological methods such as patients training, the relaxation, and music therapy can be effective in reducing anxiety. Music is an art through which feelings, emotions, perceptions, and cognitions of human can be transmitted without the requirement for speech and language. Human utilization of music is an easy and accessible way, since melody and rhythm, as two crucial factors of music, have been existed in human nature.

With a short overview of the human life history, it is indicated that the use of music as either an art or as a means of communication and in a form of therapy, has a long run history like the history of human. Sometimes music is soothing and sometimes intervening. But its effect on the body and human psyche is unquestionable (Bunt and Hoskins, 2002).

The aim of music therapy is that the patients will be enabled to expand their relationships and to express contents and comments via music which cannot be explained in the format of words (Gold et al., 2005).

Music therapy also plays a role in people's cognitive, physical, and emotional health and the mental health is moreover strengthened by the arrangement of the different music sheets and format of words (Choi, 2008). Individuals are protected in the face of sadness, guilt, and loneliness and music can be used to combat undesirable feelings and to reduce loneliness feeling in depressed person (Choi, 2008; Gillam, 2003). The background of researches indicates that music has a positive effect on the mood and cognition (Riello and Frisoni, 2001).

The conducted studies have emphasized on using music as a therapeutic tool and it is believed that the music therapy acts as a natural antidepressant. The accuracy in selecting music can have an influence on the creation and reduction of depression. The use of music with the soft and relaxing rhythm can help reduce the roots of depression, such as anger, frustration, sadness, and anxiety and can improve behavioral patterns (American music therapy association, 2007).

The other advantage of attending in music therapy can provide opportunities for social relationships (Schaffer, 2005) and can make positive changes in mood and body of individuals and along with it, enhances the sense of control over life, reduces the tension and anxiety and also enriches the confidence in people (Sheibani and colleagues, 2010).

Sheibani and colleagues (2010) examined the effect of music therapy on depression and the loneliness of elderly people. The results of their study revealed that the depression of elderly people will be reduced after the music therapy intervention.

In a study by Castillo Perez and colleagues (2010) on the effects of music therapy on depression compared with psychotherapy, it was concluded that the group who was exposed to music therapy, showed lower depression symptoms than the group underwent psychotherapy (Castillo et al., 2010).

Chan and colleagues (2011) performed a study with the aim of evaluating the effectiveness of listening to music on reducing depressive symptoms adults. The results displayed that listening to music during a period of time, will cure symptoms of depression in the adult population.

Chou and Lin (2012) studied the effectiveness of music in treating depression and the improvement of cognitive status during 12 sessions of music therapy for elder people with dementia. Their results showed a significant reduction in depressive symptoms of elderly patients with dementia in the twelfth session. The results also showed an improvement in cognitive function after six sessions so that their cognitive function improvement was significantly increased in the twelfth session even after one month follow-up study. Moreover, Lengdabler and Kiessling (1989) moreover, examined the effect of music group therapy on patients. Their depression and anxiety was relieved after 6 weeks of psychological musical performances and it was indicated that psychological musical performances probably help patients spend their time in coping with difficult process of disorder individually. In this regard, the results of an investigation by Nanbaksh and colleagues (2009) yielded that listening to relaxing music will decrease anxiety and pain in laboring women (women giving birth).

In relation to effectiveness of music therapy, Burak in 2007 carried out a research on elder people with 80 years old; the results indicated the music causes more healthy sense, less likely to visit a doctor and a significant improvement in depression, loneliness, and emotional state.
In another study Guetin and colleagues (2011) studied the effectiveness of music therapy on anxiety and depression in patients with Alzheimer, their results demonstrated the positive effect of music on anxiety and depressive symptoms after the intervention of music therapy. Diabetes illness creates many restrictions which causes a reduction of mental health in these patients such as; having a coercion in repeated injections of insulin, its funding, forcing an attention to diet, frequent infections, regular admissions to hospitals due to possible complications and limitations in the context of reproduction, a family formation and the employment in a job for a person. On the other hand, depression can affect patients' motivations and behaviors for caring for themselves, specially, blood sugar control. Therefore, the treatment of depression has a positive impact on the quality of life and the improvement and reduction of diabetic complications in patients as well.

In the present study, thus, the researcher attempted to find the answer of the question whether the application of music therapy as a supplement and non pharmacologic therapy can to what extent reduce symptoms of depression and anxiety in patients with diabetes?

MATERIALS AND METHODS

The research methodology in the current study was experimental and the design was pre-test and post-test in the control group.

Participants:
The study population included all diabetic patients in 22 regions of Tehran who admitted to medical center in 1.12.2013 to 29.12.2013. The sampling method in this research conducted in two form, Firstly by cluster sampling and secondly randomly, at first one region was selected randomly (region 3) then between all medical centers in this region one medical center was chosen randomly. Beck anxiety and depression inventories was distributed between all patients (126 patients), between those who attained above 22 score in anxiety and above 20 score in depression (79 patients), 30 patients selected and replaced in the experimental group (n = 15) and the control group (n = 15) randomly. According to the purpose of research, one of the most significant criteria for placing diabetic persons in the research was; obtaining above-average scores in Beck's anxiety and depression inventories.

Data collection:
Beck Anxiety Inventory (BAI):
This test has 21 components and each component is scored on a scale value from 0 to 3. Therefore, the total score varies from 0 to 63 .The Internal consistency 0.92 and the test-retest reliability 0.75 have been reported (Beck, 1988). Also in Iran this inventory has obtained proper reliability and validity. (khosh,2008)

Beck Depression Inventory (BDI):
Beck Depression Inventory is one of the most common and most reliable psychological tests. This test is applicable to all social strata and environments and is not depend on the dominant culture in a society. The test evaluates a wide range of symptoms and 21 aspects of depression. Each items score on a scale value of 0 to 3. Hence, the total score varies from 0 to 63 The concurrent validity 0.79 and the test-retest reliability 0.67 have been reported. (khosh,2008)

The performance method of Music therapy:
The experimental group was exposed to 10 sessions of passive music therapy and 2 sessions of active music therapy (30 minutes each session). The passive music therapy includes listening to the music, this means that, the experimental group was asked to listen to the selected songs three times a day for half an hour each time. But the active music therapy began when the subjects should listen to the selected music at least five times and then they entered to the active music phase which was included a discussion and debate about listening the music. The activities that were performed in this section comprise discussing about music, doing a mime show about the sound of music, expressing the impacts of music on the subjects, and the researcher was questioning from each subjects about their feeling, memories, and their experiences. After the end of music therapy sessions, in the next step, the post-test scores were obtained by conducting the Beck Anxiety inventory again on both groups. After one month follow-up tests were also performed on them. In order to achieve research goals, a foreigner training package of music therapy was utilized after translating, adapting and localizing to Iranian culture.

At each session, themes of pleasurable, energizing, and sad pieces were broadcast to the subjects. The pleasurable themes bring about liveliness and doleful themes by stimulating and evoke memories and depletion of the tragic sense result in sympathy and solace.
Results:
Table 1 shows that there is a significant difference between mean and standard deviation of the experimental and control groups in the stages of pre-test, post-test, and follow up for depression and anxiety. To obtain the results, Mancova analysis was utilized.

Table 1: Descriptive indicators of depression and anxiety in diabetic patients.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group</th>
<th>Pre-test stage</th>
<th>Post-test stage</th>
<th>Follow up stage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>31.46</td>
<td>4.19</td>
<td>22.05</td>
<td>4.26</td>
</tr>
<tr>
<td>Control group</td>
<td>31.07</td>
<td>3.78</td>
<td>32.11</td>
<td>3.31</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental group</td>
<td>32.32</td>
<td>3.76</td>
<td>20.46</td>
<td>4.73</td>
</tr>
<tr>
<td>Control group</td>
<td>33.91</td>
<td>3.29</td>
<td>33.91</td>
<td>4.47</td>
</tr>
</tbody>
</table>

As can be seen in table 2, the effect of music therapy on anxiety and depression in diabetic patients in combination variable with Partial η= 0.57, s Lambda & Wilk=0.428, P<0.01, and F (2.25) =16.67 has a significant effect. It means that music therapy is effective on anxiety and depression in diabetic patients and Chi's share (0.57) shows the severity which indicates a very high impact. According to the table the results of music therapy was effective on depression in diabetic patients that the post-test with F (1.26) =14.31, P<0.01, η=0.36 and follow up stage F (1.26) =12.08, P<0.01, and η= 0.29 confirm this effectiveness. The effect of music therapy on anxiety in diabetic patients was significant with post-test F (1.26) =26.6, P<0.01, η=0.51 and in follow up stage F (1.26) =25.14, P<0.01, η=0.48.

Discussion:
The purpose of this research was to investigate the effectiveness of music therapy on anxiety and depression in the diabetic patients of Tehran. The hypothesis of present study was music therapy effects on the depression of diabetic patients. The results indicated that training in music therapy is effective on the reduction of the depression in diabetic patients. Therefore, the research hypothesis was approved. The findings of the research are consistent with the results of studies by Lengdobler& Kiessling(1989); Choi(2008); Gillam(2003); Lehtonen (2005); Burak (2007); Castillo-Pérez and colleagues (2010); Chan, Wong &Thayala (2011); Guetin et al., (2011); Chou & Lin (2012).

In explaining these findings, it seems that the type of themes and pieces that were used in the present study had an influence on the reduction of depression.

Because the sad themes decrease negative pressure energy due to the frustration and sadness through the emotional depletion and invigorating themes, strong rhythms and stimulated melodies with positive and desirable feelings cause the energizing and strengthening feeling.

These pieces such as a pleasant and delightful shock convert depression, weakness, and lethargy to mobility and create sense of ability, proficiency, and determination. The power of music can be utilized for reducing lethargy, sadness, and depression (Zadehmohamadi, 2005). Lehtonen (2005) also emphasizes that music therapy acts against feelings of sadness and guilt in elder people and it brings about falling of pleasure.

Helping in recalling past events, providing an opportunity for non-verbal expression of a wide range of emotions and cognitions, identity and self-concept, changing the mood by reducing anxiety and depression are involving positive influences that are considered in music therapy.

According to psychoanalytic approach in music therapy, musical experience is one of the paths which can bring the unconscious into consciousness that people can outflow unconscious depressogenic feelings and solve them through this way. Likewise, the findings of research regarding this hypothesis stating that music therapy has an influence on anxiety of diabetic patients, demonstrated that music therapy training was effective in reduction of anxiety in patients with diabetes, hence, the hypothesis was proved. The results of this part of study are in agreement with the findings of Lengdobler& Kiessling(1989); Nanbakhsh and colleagues (2009); Guetin et al., (2011).

Listening music brings about a soul relaxation, a mental circumstance improvement, and stress effects reduction on individuals related to communications, unity, and conformity. Employing music brings about a soul relaxation, mental circumstance improvement, stress effects reduction, and it helps individuals in connection with communications, unity, and conformity.

Table 2: Results of co-variance analysis for examining the effects of music therapy on depression and anxiety in diabetic patients.

<table>
<thead>
<tr>
<th>Variables</th>
<th>F</th>
<th>Lambda &amp; Wilk</th>
<th>Sig</th>
<th>η</th>
<th>F</th>
<th>Sig</th>
<th>η</th>
<th>F</th>
<th>Sig</th>
<th>η</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>16.67</td>
<td>0.428</td>
<td>0.01</td>
<td>0.57</td>
<td>14.31</td>
<td>0.01</td>
<td>0.36</td>
<td>12.08</td>
<td>0.01</td>
<td>0.29</td>
</tr>
<tr>
<td>Anxiety</td>
<td>26.6</td>
<td>0.01</td>
<td>0.51</td>
<td>25.14</td>
<td>0.01</td>
<td>0.48</td>
<td></td>
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</tr>
</tbody>
</table>
Music is able to accelerate patient recovery time. Winter and colleagues (1994) investigated the effect of music on the stress and anxiety of hospitalized patients in the surgical ward. The study revealed that subjects, who listened to music during the residency in surgery ward, were experiencing less anxiety while being transferred to the surgical ward.

Eventually, the results of present research showed that music therapy can be used as a means to promote the mental health in patients with diabetes, reduce the overload treatment costs, and improve the quality of life.

The limitation of the study was the diagnosis of depression and anxiety in diabetic patients based on Beck Depression and Anxiety inventories and it is noted that the clinical diagnosis was not based on a viewpoint of an expert.

REFERENCES


Gillam, N., 2003. Evaluated a music workshop which was established in 1995, research and development officer mental health.


