Effect of a Quality of Life Education Program on Psychological Well-being and Adherence to Treatment of Diabetic Patients

Faezeh Jahan*, Saeed Nematolahi

1. Assistant Professor, Department of Psychology, Semnan Branch, Islamic Azad University, Semnan, Iran.  
2. Master of Clinical Psychology, Department of Psychology, Semnan Branch, Islamic Azad University, Semnan, Iran.

Introduction: Diabetes is a chronic disease with fatal health complications. Identifying the psychological factors that control this disease is very important, one of which is Quality of Life (QoL).

Objective: This study aimed to investigate the effect of a QoL education program on psychological well-being (PWB) and adherence to treatment of patients with type 2 diabetes.

Materials and Methods: This is a pilot study with a quasi-experimental design based on pre-test and post-test phases. The statistical population consists of all diabetic patients referred to health centers in Semnan City, Iran during the 6 months from March to September 2018. Of them, 30 type 2 diabetes, aged 30-60 years (male and female) were selected based on the inclusion criteria and randomly assigned to the intervention and control groups. They were first assessed by using Hayes’s general adherence scale (GAS) and Ryff’s psychological well-being scale the short form (PWBS-SF). Then, the intervention group received QoL education in 12 sessions, once per week each for 90 min. Then, post-test assessments were carried out. The collected data were analyzed using MANCOVA.

Results: The QoL education program significantly increased adherence to treatment (P=0.005) and PWB and all its dimensions (autonomy, environmental mastery, personal growth, positive relations with others, be purposeful in life, self-acceptance) in patients (P=0.005).

Conclusion: Since diabetes is one of the chronic diseases that need constant care and there is no definitive and immediate treatment for it, increasing PWB and adherence to treatment in patients to control this disease by QoL education can be very effective.
Introduction

Diabetes is a chronic disease and one of the most common diseases in the world. Despite significant advances in medical science, there is still no definitive and short-term treatment for it. This disease is a constant struggle for the sufferer because affected people are threatened by the presence of an incurable disease and the possibility of severe complications and shortening of life span [1]. The prevalence of diabetes in the world is projected to increase from 4% in 1995 to 5.4% in 2025, during which the number of affected population will increase by 122% [2]. Chronic hyperglycemia causes damage, dysfunction, and failure of various body organs, especially the eyes, kidneys, nerves, and cardiovascular system [3].

In recent years, developments in the treatment of psychological disorders and chronic diseases such as diabetes have indicated the role of psychological interventions, including interventions based on improving the Quality of Life (QoL), in controlling and improving the disease. Health-related QoL is a concept that has found a special place in psychological research in recent years. There are various definitions for health-related QoL. Some define it as an individual’s ability to manage life [4], while others define it as a descriptive concept that refers to the health and promotion of emotional, social, and physical aspects of individuals and their ability to perform daily tasks [5]. However, the most accepted definition in this area is perhaps provided by the World Health Organization (WHO): “individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns.”

QoL is a purely subjective issue and cannot be seen by others and is based on people’s understanding of various aspects of life [6]. One of the issues in QoL is Psychological Well-being (PWB). It refers to what a person needs for his or her well-being and health [7]. In other words, PWB generally deals with a person’s physical and mental health and general satisfaction with life, which also includes concepts such as job satisfaction. In other words, PWB is a broad concept that covers a variety of issues [8]. The PWB approach examines the existential challenges of life and places great emphasis on human evolution and progress [9].

One of the important goals of educating the patients and increasing their QoL is to encourage them to adhere...
to the treatment regimens [10]. One of the major problems in the proper control of diabetes is the patients’ lack of adherence to treatment regimens, such that in some studies, the rate of non-adherence to treatment in diabetic patients is 23%-93%, and some have been reported in one-third to three-quarters of patients [11]. Low adherence of patients is one of the biggest challenges for success in the treatment of chronic diseases such as hypertension, hyperlipidemia, and diabetes [12]. In some chronic diseases, multidrug regimens may need to be used. In diabetes, it is often necessary to use a multidrug regimen to control blood sugar, blood pressure, and blood lipid. Patients’ adherence to prescribed medications is a vital factor in achieving metabolic control [13]. This study aimed to determine the effect of QoL education on adherence to the treatment regime and the PWB of patients with type 2 diabetes.

**Materials and Methods**

This is a pilot study with a quasi-experimental design. The study samples were 30 patients with type 2 diabetes referred to health centers in Semnan City during the six months from March to September 2018. The sampling was done by using a convenience sampling technique, and the sample size was determined based on the minimum sample size used in quasi-experimental studies [14]. The inclusion criteria were diagnosis of type 2 diabetes by a physician, aged 30-60 years (due to having ability to better cooperate in training sessions), having the disease at least one year before the study, willingness and informed consent to participate in the study, referring to one of the study health centers, and having a medical record. Absence from more than two interventional sessions and unwillingness to continue participating in the study were the exclusion criteria. The participants were systematically divided into two groups of intervention (n=15) and control (n=15).

One of the data collection tools was the General Adherence Scale (GAS), designed by Hayes in 1994. It measures the patient’s willingness to adhere to a doctor’s advice in general. It has 5 items rated on a 6-point Likert-type scale where two items of 1 and 3 have reversed scoring [15]. The Cronbach alpha coefficient of this questionnaire is 0.68. In the present study, the Cronbach alpha for measuring the reliability of Its Persian version was reported as 0.83. The other tool is the Psychological Well-being Scale, Short-Form (PWBS-SF). It was designed by Ryff in 1989 and revised in 2002 by Rashid and Anjum [16, 17]. It has 18 items and 6 subscales: autonomy (ability to pursue desires and act on personal principles), environmental mastery (ability to manage everyday affairs, especially daily life issues), personal growth (feeling that potential talents and abilities are realized over time and throughout life), positive relations with others (people who are important in a person’s life), having a purpose in life (having goals that give direction and meaning to one's life), and self-acceptance (being pleased with how things have turned out). It is a self-assessment tool with items rated on a 6-point scale from 1=strongly agree to 6=strongly disagree. Higher scores indicate better PWB [18]. This tool has been used in many studies [19-21]. In the present study, its Cronbach alpha value was obtained 0.75.

To observe ethical considerations, after obtaining the consent from participants, the study objectives and methods were explained to them and they were assured that their information was kept confidential, and was free to leave the study at any time. After baseline assessments, the intervention group received QoL education for 6 weeks, twelve 90-min sessions, while the control group received no intervention. However, they received an educational program after the end of the study. Babaei’s QoL educational protocol [14] was used in the educational sessions. The summary of the sessions is presented in Table 1. The MANCOVA was used to evaluate the effect of QoL intervention. For checking the assumptions of ANCOVA, Box’s M test was used to assess the equality of covariance matrices, and Levene’s test to measure the equality of variances.

**Results**

Of 30 patients, 15 were men and 15 women with a Mean±SD age of 43.5 (13.5) years. All were married and 10% had a high school diploma, 70% a bachelor’s degree, and 20% a master’s degree. In Table 2, the descriptive indicators of the two groups are presented in each of the subscales of PWBS-SF in pre-test and post-test phases. As can be seen, in the intervention group, the mean score of adherence to treatment and PWB in patients is higher than in the control group.

Box’s M test showed the equality of covariance matrices of adherence to treatment between the two groups (Box’s M=12.755, F=1.96, P>0.05); Levene’s test results showed the equality of variances; the Kolmogorov-Smirnov test results showed the normal distribution of data. Hence, MANCOVA was conducted for comparing the effect of QoL intervention on adherence to treatment in diabetic patients. Its results are presented in Table 3, which indicates that the QoL educational intervention was effective in improving adherence to treatment in patients with type 2 diabetes (F=0.183,
Table 1. The Quality of Life (QoL) education protocol

<table>
<thead>
<tr>
<th>Name</th>
<th>Sessions</th>
<th>Definition</th>
<th>Purposes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquaintance</td>
<td>1: Greeting, introducing, and motivating to participate in the sessions</td>
<td>-</td>
<td>To know their current level, and be informed about the program and its goals</td>
</tr>
<tr>
<td></td>
<td>2: Proper diet, sleep, and physical activity</td>
<td>Follow a diet that includes all the necessary nutrients, adequate sleep, and exercise</td>
<td>To understand the importance of proper diet, adequate sleep, and physical activity, and practice and apply these strategies in each of these areas, during and after the intervention</td>
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<tr>
<td></td>
<td>3: Develop coping skills to increase adaptation</td>
<td>Adaptability is an ability to accept reality and is considered the key to psychological well being.</td>
<td>To get familiar with effective coping strategies that improve adaptability, and having practice and use these strategies during and even after the intervention</td>
</tr>
<tr>
<td></td>
<td>4: Optimism</td>
<td>Imagining that everything will be OK</td>
<td>To become familiar with the concept of optimism and identify specific strategies that can turn people into optimists</td>
</tr>
<tr>
<td></td>
<td>5: Humor</td>
<td>The ability to generate a humorous and funny subject</td>
<td>To become familiar with the concept of humor and know specific strategies for adaptive humor</td>
</tr>
<tr>
<td></td>
<td>6: Purposefulness</td>
<td>Trying to achieve something in life and having a useful goal</td>
<td>To become familiar with the concept of purposefulness and know strategies for pursuing a purposeful life</td>
</tr>
<tr>
<td></td>
<td>7: Enjoyment of an experience</td>
<td>Enjoying an experience or feeling</td>
<td>To become familiar with the concept and know specific strategies that can help enjoy life</td>
</tr>
<tr>
<td></td>
<td>8: Hope</td>
<td>Having a belief that some wishes and interests will finally come true one day</td>
<td>To become familiar with the concept of hope and know specific strategies that strengthen hope</td>
</tr>
<tr>
<td></td>
<td>9: Compassion for others</td>
<td>Doing things for the benefit of others and making them happy expecting nothing in return</td>
<td>To become familiar with the concept of compassion and know strategies for compassion and encouraging people to participate in charitable activities</td>
</tr>
<tr>
<td></td>
<td>10: Gratitude, a key factor in the sustainability of social interaction</td>
<td>The desire to thank and appreciate others who create beautiful moments in life</td>
<td>To become familiar with the concept of appreciation and know strategies that can make people grateful</td>
</tr>
<tr>
<td></td>
<td>11: Moral behavior</td>
<td>Morality refers to a set of personal or social standards for good or bad behavior</td>
<td>To teach specific strategies that improve the ability to behave right, and practice and apply these strategies during and even after the intervention</td>
</tr>
<tr>
<td></td>
<td>12: Spirituality</td>
<td>Spirituality means believing in a transcendental power that controls everything</td>
<td>To teach specific strategies that improve spirituality, and practice and apply these strategies during and even after the intervention</td>
</tr>
</tbody>
</table>

For the PWB variable, Box’s M test showed no equality of covariance matrices (Box’s M=15.2, F=1.58, P<0.05); therefore, the results of Pillai’s trace were reported. Levene’s test results showed the equality of variances (P>0.05), and the Kolmogorov-Smirnov test results showed the normal distribution of data. The results of MANCOVA showed that the QoL educational intervention was effective in improving the PWB of diabetic patients (F=0.122, P<0.001).

Discussion

According to the findings of the present study, the number of diabetic patients who received QoL education significantly increased their adherence to treatment. This finding is consistent with the results of some similar studies [22-30]. Gregg et al. showed that adherence to the treatment regimen in people with type 2 diabetes is influenced by QoL, social and family support, and patients’ beliefs and individual values [31]. Their findings indicated that people with diabetes need support and help.

Family members have an important role in treatment adherence of patients and are considered as sources of support without which it is difficult and sometimes impossible for patients to adhere to a treatment regimen. Besides, the support of the treatment team, adequate education and information on diabetes and its complications, and the elimination of information needs and ambiguities in the form of self-care group sessions are also important in improving treatment adherence. Health care providers are unable to facilitate patients’
Table 2. Descriptive statistics of Psychological Well-being (PWB) dimensions in two groups before and after the intervention

<table>
<thead>
<tr>
<th>Variables</th>
<th>Groups</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>8.72±8.27</td>
<td>8.86±8.74</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>10.22±8.16</td>
<td>11.25±10.24</td>
</tr>
<tr>
<td>Autonomy</td>
<td>Control</td>
<td>8.79±8.85</td>
<td>8.25±8.64</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>10.81±8.48</td>
<td>11.46±10.26</td>
</tr>
<tr>
<td>Environmental mastery</td>
<td>Control</td>
<td>8.28±8.53</td>
<td>8.92±8.19</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>10.82±8.49</td>
<td>11.75±10.43</td>
</tr>
<tr>
<td>Personal growth</td>
<td>Control</td>
<td>8.65±8.29</td>
<td>8.77±8.79</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>10.56±8.74</td>
<td>11.15±10.82</td>
</tr>
<tr>
<td>Positive relations with others</td>
<td>Control</td>
<td>8.72±8.21</td>
<td>8.86±8.83</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>10.22±8.82</td>
<td>11.25±10.29</td>
</tr>
<tr>
<td>Purpose in life</td>
<td>Control</td>
<td>8.88±8.23</td>
<td>8.98±8.72</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>10.42±8.19</td>
<td>11.68±10.21</td>
</tr>
<tr>
<td>Self-acceptance</td>
<td>Control</td>
<td>65.14±11.44</td>
<td>67.80±10.28</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>68.04±10.22</td>
<td>73.09±9.77</td>
</tr>
</tbody>
</table>

Table 3. MANCOVA results for Psychological Well-being (PWB) and adherence to treatment variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Effect</th>
<th>Values</th>
<th>F</th>
<th>df</th>
<th>Error df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWB</td>
<td>Pillai’s trace</td>
<td>0.747</td>
<td>0.122</td>
<td>3</td>
<td>54</td>
<td>0.003</td>
</tr>
<tr>
<td>Adherence to treatment</td>
<td>Wilk’s lambda</td>
<td>0.991</td>
<td>0.183</td>
<td>3</td>
<td>54</td>
<td>0.001</td>
</tr>
</tbody>
</table>

treatment adherence. They focus more on providing clinical care and treatment for them and less on QoL education and counseling and do not have enough time to listen to patients’ problems let alone teaching patients and their families. However, patients demand a coordinated care model and health care interactions; a model of care that is followed by discussion and understanding and is based on participatory decision making according to individual preferences and along with the provision of alternative treatment options to patients.

Lack of self-management training has been reported in other studies as one of the major barriers to adhering to the diabetes treatment regime. Cacioppo et al. also stated that lack of information and poor-quality care is a common barrier to continued care and treatment adherence in developing countries [32]. Bautista et al. reported self-reliance and active participation in self-care planning to be important factors for greater self-care and treatment adherence in patients [33].

The results of our study showed that QoL education caused a significant increase in PWB scores of diabetic patients. This finding is consistent with the results of other studies [32-34]. Awareness of health care providers about the importance of providing such training can have positive results in improving the provision of services to patients. By using these results, nurses, counselors, and health care providers can use effective QoL education in chronic patients and take effective steps to improve their condition and reduce their dependence on medical staff and enable them to manage their problems. The QoL education can lead to a sense of self-esteem and self-sufficiency in the patients and they can gain strength, energy, ability to perform daily activities, and self-care. Therefore, their view of their abilities and
surroundings becomes more positive and they can benefit from higher PWB. One possible factor in increasing the PWB of these patients was their feeling of controlling the disease. Patients feel less mentally controlled due to having a long and chronic illness and feeling helpless due to depression and having negative thoughts about their abilities. By self-management technique, these patients are taught that the symptoms of increased/decreased blood sugar area kind of daily experiences, and they can manage different daily experiences, and control the signs and symptoms of the disease by identifying the triggers. Therefore, by increasing the sense of control over symptoms and reducing the incidence of blood sugar fluctuations, the patients’ QoL improves [34].

Due to the high level of stress in society and the lack of supporting systems in this field, it is suggested that further studies be conducted to determine the most effective educational methods for the improvement of PWB in diabetic patients. Addressing psychological factors such as QoL can improve the factors affecting self-care and, thus, play an important role in controlling diabetes. Therefore, it is suggested that, in addition to medication, special attention be paid to improve the QoL of these patients. Due to the low number of samples in this pilot study, it is suggested that QoL intervention on diabetic patients in future studies be performed with a larger sample size to have higher generalizability. Another limitation of this study was that it was performed on type 2 diabetic patients referred to two health centers in one city; hence, the results cannot be generalized to all type 2 diabetic patients in the country. Moreover, the mental conditions of the subjects may be affected by their answers to the questions.

Ethical Considerations

Compliance with ethical guidelines

The present study has Ethical approval (Code: IR.SEMUMS.REC.1397.185). The study objectives and procedure were explained to all participants, and their written informed consent was obtained.

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Authors contributions

Data collection: Saeed Nemtollah; Conceptualization, Writing – original draft, and Data analysis, Writing – review & editing: Faezeh Jahan and Saeed Nemtollah.

Conflict of interest

The authors declared no conflict of interest.

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