Introduction

Thalassemia disease is a hereditary chronic hemolytic anemia and is common in the Mediterranean regions like Italy, Greece, Cyprus, Lebanon, and Iran. As this disease has different types, thalassemia major is considered as the most common chronic disease in the Mediterranean region (1). This disease is derived from the lack of synthesizing one or several polypeptide globins reactions that according to genetic laws of Mandle, passes down from generation to generation (2). According to these findings, the necessity of mental support and rehabilitation programs with the aim of increasing the motivation and improvement of mental and physical state in these patients is obvious. To reach this matter, one of the educational programs is positive thinking. Positive thinking means the permission of positive thoughts, contemplations, and imaginations.
into mind that guide the growth and success of human beings (9). Research shows that there is a significant positive relationship between optimism and different aspects of health. This plays an important role in preventing the physical and mental disruptions (10,11). The results of Talor et al showed that if human’s conceptions are accompanied with a positive thought and an optimistic and hopeful perspective about future, not only this helps the person in his or her routine life, but it also helps him or her in very stressful and threatening incidents of life and it can reduce anxiety (12). Evidence shows that optimism is useful for human’s health when a person is under severe stress. By the same token, optimism improves health, reduces fear caused by stress and increases the effect of medicine in severe conditions (13). Also, in a research that was conducted by Victoria Cerezo et al on women inflicted with cancer, results indicated that educating optimism can lead to an increase in happiness. This was evident in experimental group rather than control group (14). A study conducted by Jabbari et al in Iran showed that educating optimism led to a decrease in inefficient attitudes but augmented the level of happiness in experimental group rather than control group (15). Similarly, Jafar Tabatabae et al highlighted that optimism education led to a decrease in the anxiety and depression in experimental group rather than control group (16). Based on the aforementioned matters, thalassemia major patients confront various physical and mental problems and these factors can increase stress and decrease happiness in these patients (17). In this regard, the necessity of psychological intervention is obvious to help these people to accept that although they are not able to control the infliction, but they can change their attitude and enjoy their life (18). Nowadays, the lifespan of these patients has increased due to the advances in research and treatment. Therefore, this research was conducted to determine the effectiveness of positive thinking training on perceived stress and happiness in patients with thalassemia major.

**Methods**

This semi-experimental type of research had a pre-test, post-test design with a control group. All girls in the age range of 17 to 25 who were inflicted with thalassemia major included the study sample. Based on available sampling, the study sample was randomly assigned into two groups of 10 persons (experiment and control group). In order to enroll subjects into the study, one of the researchers, by the permission of Medical University of Jiroft, paid a visit to the center of special diseases and provided necessary explanations regarding the purpose and the aims of the study. The educational sessions (positive thinking) took place in the center of consultation unit of education in Jiroft. These sessions were held twice a week for experimental group. Both groups took the pre-test as well. Finally at the end of training sessions a test was taken from both groups. After finishing the research, training positive thoughts were presented to the control group. The summary of activities that were presented during each session is shown below (19) (Table 1).

**Research Tools**

**Perceived stress scale**

The perceived stress scale (PSS) (20), is the most widely used tool to measure the perception of stress. This scale includes 14 items and analyzes the amount of thoughts and feelings during previous months. Items are answered on a 5-point Likert type scale ranging from 0 (never) to 4 (always). Items 4, 5, 6, 7, 9, 10, and 13 are graded reversely and include never (0) to most of the time (4). The minimum score is zero and the maximum score is 56. In a study conducted by Ghorbani et al Cronbach alpha was calculated to be 0.86 in American society but it was reported to be 0.81 in Iranian society (21). For content validity purposes, the questionnaire was approved by 10 experts of Mashhad University of Medical Sciences. The reliability of the Persian version of the questionnaire was calculated by Bastani et al with Cronbach alpha coefficient 0.74 (22).

**Oxford happiness questionnaire**

This measure was developed by Argyle and Lu includes 29 questions. Every question consists of four items and is graded from 0 to 3. Thus, the score of every participant is fluctuated from 0 to 87. They reported the coefficient of this questionnaire at 0.90 (23). Furthermore, Furnham (1990) and Francis (1998) reported a coefficient of 0.90 and 0.92 for this questionnaire respectively (24). The coefficient of this questionnaire was reported to be at 0.92 by Alipoor and Noorbal in Iran (24).

**Table 1.** The summary of activities during each session

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Subjects</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Get familiar to thinking</td>
<td>Participants get familiar with the concept of positive and negative thinking</td>
</tr>
<tr>
<td>2</td>
<td>Identifying the positive and negative thinking</td>
<td>Participants get familiar with their positive and negative thinking</td>
</tr>
<tr>
<td>3</td>
<td>Mood</td>
<td>Participants use their various mood in different situations</td>
</tr>
<tr>
<td>4</td>
<td>Communicating the interchanging conceptions and emotions</td>
<td>Participants use their various feelings in different situations</td>
</tr>
<tr>
<td>5</td>
<td>Emotion</td>
<td>Participants show their positive emotions and see the consequences in their lives</td>
</tr>
<tr>
<td>6</td>
<td>Practicing the positive points</td>
<td>Positive points and aspects are written</td>
</tr>
<tr>
<td>7</td>
<td>The definition of optimism</td>
<td>Participants get familiar with the concept of optimism</td>
</tr>
<tr>
<td>8</td>
<td>The definition of cheerfulness</td>
<td>Participants get familiar with the concept of essential cheerfulness</td>
</tr>
<tr>
<td>9</td>
<td>Creating a positive image in their minds</td>
<td>Identifying the positive and negative images and creating a positive schema for them</td>
</tr>
<tr>
<td>10</td>
<td>The education of relaxation</td>
<td>Participants connect their minds and bodies together and relax themselves</td>
</tr>
</tbody>
</table>
Results
Table 2 depicts the mean and standard deviation of perceived stress and happiness in two groups of experiment and control. As can be seen from Table 2, there was a difference in the mean of post-test for perceived stress in two groups of experiment and control (P=0.001). To analyze the significance of this difference and control the effect of pre-test, the statistical test of covariance was used. The premise of using the covariance test is the convergence of variances that is confirmed due to the results of Levene test (P>0.05, F = 0.0129). The results of covariance analysis are presented in Table 3.

Based on the findings from Table 3, by accepting that the control variable is pre-test scores, we could observe a significant difference between PSSs before education and after that in experiment group (P=0.001). The difference was 52% which means 52% of variance of marks in perceived stress is related to group membership. Statistical power of 0.96 indicates that the sample volume was sufficient.

Findings also showed that there was a difference between two groups of experiment and control in terms of happiness scores based on post-test results. To analyze the significance of this difference and control the effect of pre-test, the statistical test of covariance analysis was used. The premise of using the covariance test is the convergence of variances that is confirmed due to the results of Levene test (P>0.05, F = 0.0129). The results of covariance analysis are presented in Table 4.

Discussion
This study was conducted to investigate the effect of positive thoughts on perceived stress and happiness in patients inflicted with thalassemia major in Jiroft city. Based on the results, positive thinking classes decreased perceived stress. In addition, an increase was observed in terms of happiness for patients. This result is consistent with the findings of Madani and Zare (9), Taylor et al (12), Victoria Cerezo et al (14), Jabbari et al (15) and Shiri et al (19).

We conclude that positive thinking leads to a better recognition of self and positive experiences. We also highlight that self-esteem can be improved by the realization of these experiences. Considering positive points and good experiences in the past is likely to increase more positive concepts about a person and others, and this helps people to accept more responsibility about their own values and reach a fuller understanding of their own. Thus, this leads to an increase in people's happiness (24). Another result of this research was the effect of positive thought on reducing perceived stress. In order to explain this finding, it can be assumed that subjects found more awareness than their thoughts and emotions. Logical interpretation of incidents and cognitional recreation also enabled them to confront harsh conditions of life and this issue can reduce the range of unpleasant events. As a result, it reduces the perceived stress in individuals. Furthermore, according to Fredrickson's falsifying hypothesis creating positive excitement neutralizes the negative feelings and this effect not only has an impact on intellectual level but also it plays a role on physiological level and reduces the negative emotions like stress (25).

Conclusion
On account of the findings of this study, positive thinking...
sessions are recommended for patients with thalassemia disease. We also suggest that this kind of treatment be applied in other groups with similar problems.

**Ethical issues**
This study was approved and supported by Neuroscience Research Center, Institute of Neuropharmacology of Kerman University of Medical Sciences.

**Authors’ contributions**
All authors contributed equally to the writing and revision of this paper.

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