



The Clinical Trial of COVID-19 Patients: The Effectiveness of Emotion-Focused Therapy on Post-Traumatic Stress and Depression

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Abstract

Background: At the end of 2019, the world faced a phenomenon that plunged all human beings into extreme fear and anxiety. A new type of coronavirus began to spread among people around the world, and this was the beginning of one of the greatest pandemics and its problems in the world.

Objectives: The present study aimed to study the effect of Emotion-Focused Therapy (EFT) on reducing post-traumatic stress and depression among Covid-19 patients. The statistical population was all English language students at the University of Tehran who had recovered from Covid-19. A total of three students (with a mean age of 22±2 years old) were selected from those who had recovered from Covid-19 using convenience sampling.

Methods: In this study, a single-subject design was used which was a nonconcurrent multiple baseline design. The EFT protocol was performed during three baseline stages and three stages of ten 90-minute intervention and follow-up sessions. Then the subjects responded to the PTSD Checklist (PCL) and Beck Depression Inventory (BDI).

Results: The data were analyzed using visual inspection, Reliable Change Index (RCI), and percentage change formula. The results of the study indicated that the mean improvement of post-traumatic stress variable for the three patients in the post-treatment and follow-up was 42.39% and 41.54%, respectively. Additionally, this value for the depression variable was 60.78 and 60.22% in the post-treatment and the follow-up.

Conclusion: Based on the results of the study, EFT was effective on post-traumatic stress and depression in students infected with Covid-19. Therefore, it is recommended to use this treatment to reduce post-traumatic stress and depression in patients with Covid-19.

Keywords: Covid-19, Depression, Emotion-focused therapy, Post-traumatic stress, Single-subject design

1. Background

In December 2019, a new type of severe respiratory infection was reported in Wuhan, China. The first death caused by the disease was reported in China on January 11, 2020, and cases were reported in other countries such as Thailand, Japan, South Korea, and the United States by January 20, 2020 (1). This virus rapidly spread to other countries and around the world and surprisingly became a pandemic (2). WHO announced through a statement on January 30, 2020, that the outbreak of the Covid-19 is the sixth cause of public health emergency worldwide, posing a threat not only to China but to all countries (3). Genetic studies indicate that the virus is most likely new to the coronavirus family that has been transmitted from animal to human, and then from human to human. Human-to-human transmission of the virus is mainly through respiratory droplets (4) as a high viral load exists in the nasal cavity of infected patients. It has been suggested that this transmission may also occur through the air (5).

Symptoms of Covid-19 infection appear after approximately 5.2 days, which depends on the age and

condition of the patient's immune system, and the most common symptoms include fever, cough, and fatigue (6). Clinical features based on results of a chest CT scan show that the disease begins with pneumonia and acute respiratory distress syndrome, and can lead to acute heart damage and in some cases even death if the infection persists (7). Although the virus is known as Acute Respiratory Syndrome, it has recently been confirmed that 36.4% of patients show neurological symptoms including headache, confusion, and post-traumatic stress in addition to systemic respiratory symptoms which are more common in severe cases than in mild and moderate ones (8).

According to studies, Covid-19 patients are exposed to psychological problems such as stress, fear, anxiety, as well as negative thoughts and depression (9). Post-traumatic stress disorder (PTSD) is one of the most important psychological disorders that can damage the mental health of Covid-19 patients. The results of the study (10) showed that post-traumatic stress is one of the psychological effects of Covid-19 disease which has a high prevalence among people. Failure to control this psychological disorder may lead to permanent damages to the patients, such as an influx of

disturbing memories, avoidant behaviors, irritability, and emotional numbness (11). Post-traumatic stress disorder is a stress-related psychological problem that occurs in people who experience life-threatening conditions (12). According to the available sources, experiencing life-threatening physical illnesses such as Covid-19 disease can cause symptoms of post-traumatic stress disorder (13).

Epidemiological studies indicate that not all people who are exposed to the same traumatic event will develop post-traumatic stress disorder, but personal vulnerability plays an important role here. This vulnerability can be both genetic and can be acquired or reduced after birth (14). Symptoms of PTSD are divided into three categories; re-imagining the tragedy through phenomena such as dreams, past reminders, and disturbing thoughts; avoiding situations that remind the person of the accident and anesthesia of psychological origin; and (15) overstimulating by symptoms such as difficulty sleeping, concentrating, irritability, and excessive alertness (16).

According to studies, these people are highly exposed to psychological disorders such as anxiety, fear, and depression due to the current state of the disease in the world (9). The results of a study conducted on patients admitted to a Chinese hospital, including 143 participants, among which 26 people infected with Covid-19, 86 people with pneumonia, and 30 healthy individuals, show that the depression assessment index is significantly high in patients with Covid-19 (17). Depression is one of the most common mental health problems and psychiatric illnesses that lead to lack of pleasure, motivation, and intolerance of failure, avoidance of friends and family, loss of libido, increased or decreased appetite, decreased energy, premature fatigue, and sleep disorder (18).

The mortality rate of Covid-19 has somehow created negative emotions such as depression. The feeling of depression is more severe in people who are infected with the virus, especially in those who have been hospitalized for a while. The causes of depression in Covid-19 patients are not yet known, but perhaps one of the reasons is that they follow mortality rates. Depression may seem like a natural phenomenon, especially for people who are hospitalized and experience daily deaths caused by Covid-19 disease (10). Much research is needed on the cause of depression among these patients to reach a correct diagnostic opinion, but what is clear is that different psychological interventions such as therapy sessions that can help these people.

Emotion-focused therapy (EFT) is one of the proposed therapies for psychological interventions. The EFT is about activating and reorganizing emotional schemas. It is based on the key principle that everything is moving. This approach emphasizes that the experience process affects personality traits, interpersonal relationships, and even changes of the

references (19). EFT is effective both individually and in a group for depression, quality of life, PTSD, and adaptive actions. It involves methods that focus on activating strong primary emotions that are established in the context of empathetic communication. This type of treatment is also essentially a psychological structure and a key determinant for self-organization (20). EFT is one of the approaches that focus on interpersonal communication and individual emotions (21). EFT considers emotional schemas as a kind of internal response and organization that combines different levels of information including sensory-motor stimuli, emotional memory, and perceptual level information. Emotional schema is a structure, unlike cognitive schema that has non-verbal components and emotional experiences and shows a combination of biology and experience in the individual (22).

Stress and depression can weaken the immune system and make them vulnerable to diseases such as Covid-19 (23). Post-traumatic stress and depression are among the problems that physicians believe are experienced by a large number of Covid-19 patients (24). Psychological therapies are necessary to treat the problems that patients experience due to PTSD and depression (25). Given the fact that Covid-19 is a pandemic virus with unknown side effects to the medical community around the world, infected people develop some form of PTSD and depression, and they are concerned whether the disease causes them any long-term complications and their health is endangered. There is limited information and research on the coronavirus, and most research has talked about the physical and psychological problems and consequences of the virus, and little has been done to treat psychological problems.

2. Objectives

Therefore, the present study aimed to investigate the effectiveness of the Emotion-Focused Therapy (EFT) approach on PTSD and depression among English language students who survived Covid-19.

3. Methods

The present applied study was conducted using a single-subject design of the clinical trial and multiple baseline types. In this type of design, the researcher studies the effect of one variable on another variable in one or more subjects. Three English language students at the University of Tehran who were infected with Covid-19 and survived were selected by convenience sampling. Inclusion criteria included 1) Definitive diagnosis of Covid-19 through PCR, 2) Recovery from Covid-19 disease with the opinion of a specialist, 3) No underlying and chronic diseases, 4) Symptoms of post-traumatic stress and depression (Using the PTSD Checklist and Beck Depression

Inventory). Exclusion criteria were three sessions of absence during treatment, recurrence of Corona disease, having any mental disorder, and taking medication before infection to Corona disease.

Before starting the treatment, the baseline was measured three times for the subjects using PTSD and depression questionnaires. Then treatment sessions were started for all three subjects and were evaluated three times during these interventions. The subjects answered the PTSD and depression questionnaires in the first and fifth sessions, and again for the third stage, after ten sessions of the emotion-focused therapy. The individuals were evaluated in three stages of follow-up every 2 weeks one month after treatment.

3.1. Measures

3.1.1. PTSD Checklist (PCL)

A 17-item self-report scale used to assess the extent of PTSD. This list was developed by Weathers et al. (26) based on DSM-5 diagnostic criteria for the U.S. National Center for PTSD. Out of 17 items, 5 are related to the symptoms of re-experiencing a traumatic injury, 7 are related to the symptoms of emotional numbness and avoidance, and 5 are related to the symptoms of severe agitation (27). Cronbach's alpha coefficient for the reliability of the scale was calculated on 117 samples by Goudarzi at Shiraz University in Iran which was 0.93. Also, the validity coefficient of the list was 0.87 using the halving method (based on the pair or individuality of the items) (28). The scoring method of the questionnaire is the total score of 17-85 which is obtained from the total of 17 scores based on the Likert scale. The cut-off point for diagnosing post-traumatic stress is 50, and the answers have a score of Not at all = 1 to Very high = 5.

3.1.2. Beck Depression Inventory (BDI)

This questionnaire is a revised form of the Beck Depression Inventory which was developed in 1996 to measure depression in youth and adults. This is a 21-item questionnaire on a four-point scale (completely similar to me = 3, similar to me = 2, different from me = 1 and completely different from me = 0) (29). This questionnaire measures the

physical, behavioral, and cognitive symptoms of depression. Scores below 13 indicate no symptoms of depression, 14 to 19 mild depression, 20 to 30 moderate depression, and scores above 30 indicate severe depression (29). There is no consensus on the cut-off point of this scale, but researchers suggest a score of 18, which is said to correctly identify and classify 92% of people with depression (30). Beck et al. reported internal consistency, retest reliability, and content validity of this scale using factor analysis to be 0.93, 0.75, and 0.76, respectively. The reliability of this questionnaire is 0.84 in terms of internal consistency according to Cronbach's alpha and the correlation obtained from the halving method is 0.70 based on even and odd questions. Simultaneous and differential validity of this test has been reported 0.63 and 0.78, respectively, in Iran (31).

3.1.3. Data analysis method

In this study, clinical significance was used to analyze the data. Clinical significance refers to the scientific value or significance of the effect of the intervention. The reliable change index and the normative comparison are two widely used approaches in clinical significance. Reliable change index (RCI) was first introduced by Trax & Jacobson (32) for analyzing the data obtained from single-case designs. In this index, the post-test score is subtracted from the pre-test score and the result is divided by the standard error of the difference between the two scores. Also, the clinical significance was calculated using a formula first developed by Blanchard & Schwarz (33) to analyze the single-subject data. The percent recovery formula is one of the methods to measure clients' progress in reducing target problems. In this formula, the pre-test score is subtracted from the post-test score and the result is divided by the pre-test score (33). Visual inspection or graphic diagram, and diagnostic improvement were used to analyze the data and evaluate the performance, and the results before and after the intervention are presented in the table below. After the treatment sessions, the data were scored and interpreted. The tables related to findings are explained below. Table 1 shows the scores of post-

Table 1. The trend of changing the stages of treatment on the post-traumatic stress

| Stage of treatment | The first person | The second person | The third person |
|--------------------------------------|------------------|-------------------|------------------|
| First baseline | 71.00 | 78.00 | 68.00 |
| Second baseline | 72.00 | 79.00 | 66.00 |
| Third baseline | 74.00 | 77.00 | 65.00 |
| Mean | 72.3 | 78.00 | 66.3 |
| First session | 69.00 | 73.00 | 61.00 |
| Fifth session | 51.00 | 61.00 | 49.00 |
| Tenth session | 39.00 | 48.00 | 38.00 |
| Mean | 53.00 | 60.6 | 49.3 |
| Reliable change index (treatment) | 5.88 | 5.32 | 5.02 |
| Improvement rate after treatment (%) | 46.05 | 38.46 | 42.68 |
| Mean (%) | | 42.39 | |
| First follow-up | 38.00 | 49.00 | 40.00 |

| Table 1. Continued | | | |
|--------------------------------------|-------|-------|-------|
| Second follow-up | 41.00 | 50.00 | 37.00 |
| Third follow-up | 40.00 | 48.00 | 38.00 |
| Mean | 39.6 | 49.00 | 38.3 |
| Reliable change index (follow-up) | 5.81 | 5.15 | 4.97 |
| Improvement rate after follow-up (%) | 45.22 | 37.17 | 42.23 |
| Mean (%) | | 41.54 | |

traumatic stress scale of the three subjects in baseline, treatment, and follow-up stages (each in three stages) along with a reliable index and overall recovery percentage based on different stages of treatment

4. Results

Participants included three female undergraduate

English students aged 20, 21, and 24 with a mean age of 22±2 years.

To better demonstrate the results of the effectiveness of the EFT, the scores of the post-traumatic stress scale are shown in Figures 1 to 3.

Table 1 and Figures 1, 2, and 3 show that post-traumatic stress is decreased in all three subjects during treatment and follow-up compared to the baseline. Given the fact that the amount of RCI

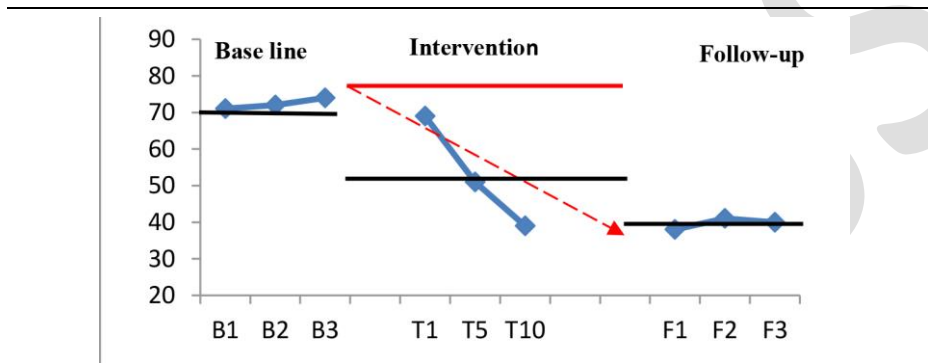


Figure 1. The first person on the scale of post-traumatic stress

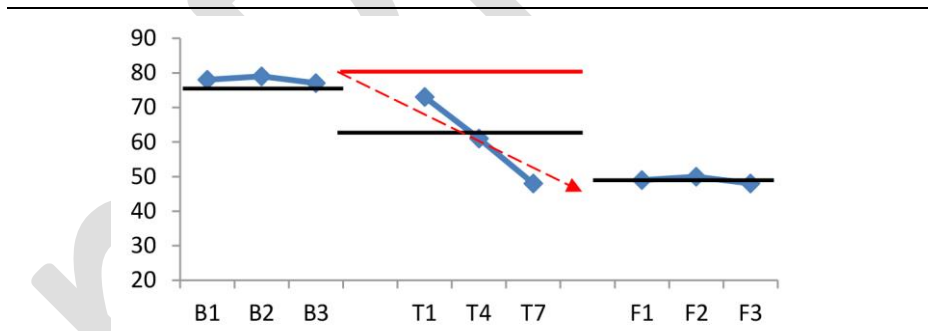


Figure 2. The second person on the scale of post-traumatic stress

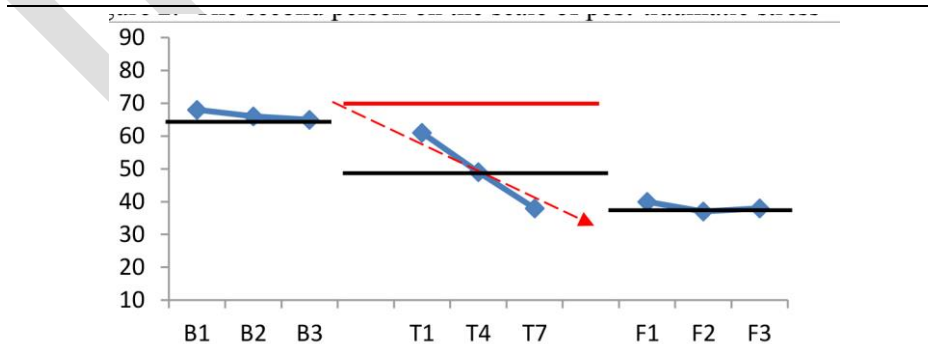


Figure 3. The third person on the scale of post-traumatic stress

obtained for three subjects in the post-treatment and the follow-up stage is 5.88, 5.32, and 5.02 and 5.81, 5.15, and 4.97, respectively, therefore they are significant at the statistical level of $z = 1.96$ ($P < 0.05$). A

reliable index above 1.96 confirms the significance of statistical results and it can be concluded with 95% confidence ($P < 0.05$) that the change or improvement is due to the effect of the intervention and is not

accidental (34). The percent of recovery for these three subjects after treatment is 46.05, 38.46, and 42.68, respectively. These three values are significantly based on Blanchard classification at the statistical level of $P < 0.05$. The percent of improvement for the three subjects during the follow-up stage was 45.22, 37.17, and 42.23, respectively. Also, considering the low scores of all three subjects compared to 50 cut-off points in the post-traumatic stress scale, it can be said that these changes are clinically significant. Therefore, it can be said that the effectiveness of EFT has reduced post-traumatic stress in these three subjects during treatment based on the percent of overall improvement, reliable index, follow-up, and cut-off point.

To better demonstrate the results of the effectiveness of the EFT, the scores of the depression scale are shown in Figures 4 to 6.

Table 2 and Figures 4, 5, and 6 show that the

average and level of variable scores of depression has decreased in all three subjects during the treatment and follow-up compared to the baseline. The amount of RCI obtained for three subjects considering reliable index formula was 5.65, 5.55, and 5.91 in the post-treatment and 5.54, 5.21, and 6.25 in the follow-up which means that this treatment approach significantly reduces depression. The percent of improvement for these three subjects after treatment and during treatment is 59.71, 64.01, and 58.62, and 58.60, 60.01, and 62.06, respectively. These three values are also significant based on the percent of improvement formula. Changes are clinically meaningful based on the cut-off point of the questionnaire which is 18. Therefore, it can be said that EFT has been effective in reducing depression in all three subjects in the treatment and follow-up based on the reliable index, the percentage of overall improvement, and the cut-off point.

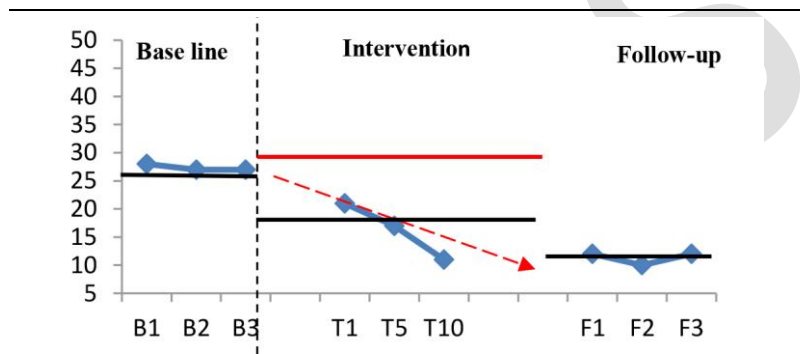


Figure 4. The first person on the depression scale

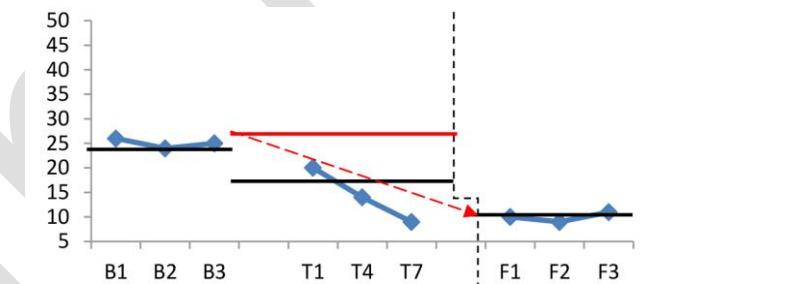


Figure 5. The second person on the depression scale

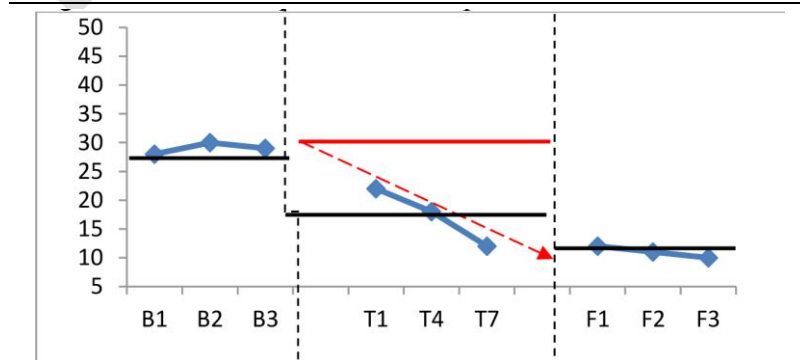


Figure 6. The third person on the depression scale

Table 2. The trend of changing the stages of treatment on the depression

| Stages of treatment | The first person | The second person | The third person |
|--------------------------------------|------------------|-------------------|------------------|
| First baseline | 28.00 | 26.00 | 28.00 |
| Second baseline | 27.00 | 24.00 | 30.00 |
| Third baseline | 27.00 | 25.00 | 29.00 |
| Mean | 27.3 | 25.00 | 29.00 |
| First session | 21.00 | 20.00 | 22.00 |
| Fifth session | 17.00 | 14.00 | 18.00 |
| Tenth session | 11.00 | 9.00 | 12.00 |
| Mean | 16.3 | 14.3 | 17.3 |
| Reliable change index (treatment) | 5.65 | 5.55 | 5.91 |
| Improvement rate after treatment (%) | 59.71 | 64.01 | 58.62 |
| Mean (%) | | 60.78 | |
| First follow-up | 12.00 | 10.00 | 12.00 |
| Second follow-up | 10.00 | 9.00 | 11.00 |
| Third follow-up | 12.00 | 11.00 | 10.00 |
| Mean | 11.3 | 10.00 | 11.00 |
| Reliable change index (follow-up) | 5.54 | 5.21 | 6.25 |
| Improvement rate after follow-up (%) | 58.60 | 60.01 | 62.06 |
| Mean (%) | | 60.22 | |

5. Discussion

The present study aimed to evaluate the effect of EFT on post-traumatic stress and depression in English students who survived Covid-19. The results indicated that EFT reduced post-traumatic stress in Covid-19 survivors. The results of the present study are consistent with those of Church (35), Soudani et al. (36), and Lofrane et al. (37) which concludes that EFT is effective on post-traumatic stress. Corona disease has certain characteristics that have increased anxiety in society. The factors such as person-to-person transmission (38), high reproduction rate (39) failure in treatment (40), rumors and misinformation about causes of the disease (41), and the possibility of recurrence of the disease (42) caused post-traumatic stress which is much more debilitating compared to anxieties of previous pandemics (43).

The post-traumatic stress that patients experience can be caused by infection with a dangerous and unknown virus that daily and momentarily kills the victims, and its long-term effects are still unclear. Post-traumatic stress and anxiety cause problems such as headache, palpitations, sweating, loss of appetite, insomnia, and cognitive symptoms such as memory impairment, concentration difficulties, as well as emotional symptoms such as anxiety, stress, restlessness (19). EFT helps patients to reduce their negative emotions through proper use, awareness, acceptance, and expression of emotions, especially positive ones in life situations, which in turn reduced post-traumatic stress. It can be said that the use of emotion regulation strategies through the techniques of the EFT allows people to be more flexible during high tension and stressful situations caused by physical and mental problems. Researchers believe that positive emotions are very important psychological resources that help a person to use effective coping strategies against stress (21). Clients were encouraged to question their distressing

thoughts and use alternative self-talk during treatment to deal with these emotions and ruminations that cause physical and psychological distress. The spread of news about the number of corona deaths around the world has created a kind of panic among people who are at risk of serious injury and even death. Meanwhile, people infected with the disease have near-death experiences, even if they do not show severe symptoms of the disease. Subjects expressed their emotions in this study by talking about Corona and the negative emotions about the virus. EFT helped subjects to accept the associated negative emotions. During treatment sessions, they concluded that although they were infected with the virus, they had overcome the risk of the disease and may not think of the consequences caused by the disease. EFT helped patients become aware of their emotions and effectively use them. Emotions determine the basic state of processing in action (44). EFT assists clients to better identify, experience, accept, examine, understand, change, and flexibly manage their emotions. As a result, patients become more adept at acquiring important information and meanings about themselves and their world that contain emotions. EFT allows trained people how, and when to express emotions (45).

Another finding of the present study was that EFT reduced depression of survivors of Covid-19. The results of the present study are consistent with those of Jones-Corneille (46), Asmari Bardezard, et al. (47), and Gili et al. (48) which conclude that EFT is effective in reducing depression. Other consistent studies include those of Carryer, Greenberg (49), (50) Ellison et al. (50), Greenberg, Auszra, Hermann (51), POS, Greenberg (52), Khoshnam et al. (53), and Webster (54) which indicate EFT is effective on depression and post-traumatic stress. The coronavirus is easily spread throughout the community in some affected areas. Local spread means that people have been infected with the virus, but many are not sure how and where they have become infected (55). The symptoms of the

virus vary from mild to severe including fever, cough, difficulty breathing, and digestive problems (56). Lack of awareness about the virus and its problems before and after infection appear to be a factor that leads to stress, anxiety, and depression in Corona disease. Fear of the unknown reduces the perception of immunity in humans and is always anxious for people and leads to depression. Limited scientific knowledge of Coronavirus also exacerbates anxiety and depression (57). Environmental stress, physical illness, separation from family and friends at the time of illness can cause depression in Covid-19 patients (58).

It can be said that EFT significantly reduces depressive symptoms by informing the person about positive and negative emotions, accepting and expressing them promptly. Previous studies have shown that high levels of positive emotions and reduction of negative emotions play an important role in positive judgment and perception (59). EFT aims at making therapeutic changes in people by expanding their emotional processing. This treatment is based on four basic principles to expand emotional processing and change the course of depression which exist in the content of the treatment package and rely on emotional and environmental support (60). These principles of emotional processing include 1) Increasing emotional awareness, 2) Expanding emotion regulation, 3) meditating on excitement, and 4) Transforming excitement which function as a guideline for working with emotions. Therefore, this treatment facilitates the creation of positive self-talk and new experiences and reduces emotional problems, especially in patients, which in turn, reduces the feeling of depression. Clients learned to be aware of their emotions instead of suppressing or being overwhelmed by them through the experience they gained in the emotional awareness stage. During the sessions, clients realized that emotions were neither necessarily frightening nor enduring. Therefore, we can hear their hidden message instead of fleeing from them or drowning in them. One of the goals of EFT is to work on the underlying processes and thoughts of unpleasant emotions by knowing and correctly expressing the inner experiences of emotions to tolerate and regulate them. These experiences are symbolized in words, meaning, and reflection so that the healthy emotions related to the needs and related actions are activated by re-tagging. Understanding and reciting negative emotions made subjects less likely to feel sad and depressed.

6. Conclusion

The present study aimed to evaluate the effect of EFT on reducing post-traumatic stress and depression in English students of the University of Tehran who survived Covid-19. Treatment sessions helped subjects to express their negative feelings, feel

relieved, and to be less involved in stress and depressive thoughts. Also, they focused more on positive emotions and did not constantly think about the consequences of the disease. The results revealed that EFT reduced post-traumatic stress and depression in patients with Covid-19.

Limitations and Suggestions

One of the limitations of the present study is the research literature. No research, to the best of our knowledge, has been conducted on the effectiveness of therapeutic approaches on the psychological problems of patients with Covid-19 due to the novelty of the disease. It is suggested that this model be implemented on larger samples and randomly assigned to a control group so that its efficiency can be evaluated using variance analysis. Also, conducting a more in-depth study is suggested on the psychological problems of Covid-19 patients.

Footnotes

Conflicts of Interest: The authors declare that there is no potential conflict of interest regarding the research, authorship, and/or publication of this article.

Ethical Approval: The present study was approved by Iran National Committee for Ethics in Biomedical Research, Tehran, Iran (IR.LUMS.REC.1399.270). During the research, all subjects were assured that their information was collected for research purposes and their identities were confidential. Then, written informed consent was obtained from the participants. It was also stated that those interested can be informed of the research results by e-mail.

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