Research Article

The Effectiveness of Acceptance and Commitment Therapy in the Experience of Pain Intensity and Life Quality of Women with Fibromyalgia Syndrome

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Abstract:

Background: The present study aims to evaluate the effectiveness of acceptance and commitment therapy on experience of pain intensity and life quality in women with fibromyalgia syndrome.

Methods: In order to conduct the mentioned research, the city of Isfahan was chosen as a case study. From among the patients with fibromyalgia referring to clinics in Isfahan, 30 people who were willing to participate in the project were purposefully selected based on inclusion and exclusion criteria and randomly assigned to two experimental (15 people) and control (15 people) groups and the Von Korff Chronic Pain Questionnaire (VCPQ) and Life Quality Short Form Survey (SF-36) were administered for pre-test. The experimental group underwent 10 sessions (90 minutes per week) of acceptance-based therapy and one week after the intervention, both experimental and control groups were retested. The research method was quantitative and the questionnaire was used as the measurement tool.

Results: Based on the results, a significant difference was observed between the experimental and control groups in the post-test stage in quality of life scores. There was also a significant difference between the experimental and control groups in the post-test stage in pain avoidance scores.

Conclusion: The results of analysis of covariance (ANCOVA) indicated that acceptance and commitment therapy (ACT) can affect the experience of pain intensity and life quality in women with fibromyalgia syndrome.

Keywords: Fibromyalgia, Pain, Acceptance and Commitment Therapy, Life Quality.

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Background:

Fibromyalgia complicated is a and multifaceted disease that has an unpredictable course; and it has a high comorbidity with other physical-functional syndromes and psychological conditions. Research has indicated that patients with fibromyalgia are more likely to experience emotional disturbances, including anxiety and depression, compared to the controls. [1] Evidence suggests that various forms of psychological pathology, such as depression and anxiety, are described based on psychological flexibility by exaggerating behavioral and emotionally maladaptive rules or by value-based behaviors and sensitivity to future-related probabilities [2]. Psychological flexibility can adapt a person's thinking and behavior in response to changes in environmental conditions [3]. Those who lack psychological flexibility, in difficult times, cannot find appropriate coping methods to get rid of such feelings [4]. As a result, a decrease in psychological flexibility in fibromyalgia patients can be expected due to the prevalence of psychological problems, depression and anxiety [5]. fibromyalgia patients experience vague and nonspecific muscle pain, which is often bilateral and worse in the neck and trunk [6].

Painful feeling of a non-painful stimulus and hyperalgesia (feeling a painful stimulus too much) is a common response in these patients. In general, these patients have a lower pain tolerance range than healthy people and experience more severe pain. [7]. Many patients with chronic pain continue to experience pain despite medication interventions, and their life quality is dramatically affected if they are unable to cope with the pain. Life quality is a variable mental structure and includes physical, psychological and social characteristics that describe a person's ability to function in the context of family, school and peers [8]. Health-related quality of life is a subset of the general concept of life quality affected by illness or treatment and is an important indicator in evaluating treatments and care. The World Health Organization defines life quality as an individual's perception of their position in a context of cultural and value systems according to their goals. expectations, standards, and interests [9]. The concept of life quality began after the World War II with research on people with certain diseases [10]. In recent years, a branch of life quality called health-related life quality has attracted the attention of researchers and therapists. Given prevalence of fibromyalgia, especially in women, and considering the effect of the spread pain of this syndrome on the life quality of these patients, and confirming the effectiveness of ACT on the severity of pain experience [11] and life quality [12] and eventually, taken into account the scarcity of studies on fibromyalgia syndrome and lack of investigation on the effectiveness of ACT for psychological problems in this group, the current study attempted to evaluate the effectiveness of ACT in the experience of pain intensity and life quality in women with fibromyalgia syndrome and answer the following question: Can this treatment reduce the experience of pain intensity and improve the life quality of these patients?

Methods

The method of this research was quasiexperimental with a pre-test and post-test design and with control group. The statistical population of this study included 243 women with fibromyalgia referring to clinics in Isfahan in 2020. According to the research topic, the independent variable is the acceptance and commitment therapy and the dependent variables included the experience of pain intensity and life quality. Thirty people were selected as the study sample consisting of patients referring to Aspian Darou Center and physiotherapy centers in Isfahan who were willing to participate in the project. In this research, the data collection tool is a questionnaire. The Von Korff Chronic Pain Questionnaire (VCPQ) was used to assess pain intensity, the 36-item Life Quality Short Form Survey (SF-36) and the Fibromyalgia Impact Questionnaire (FIQ) were used to measure the life quality and also to screen the experimental groups.

Von Korff Chronic Pain Questionnaire (VCPQ): This questionnaire was developed to measure the intensity of chronic pain (see Appendix 2). The respondent rates each of the seven items on an eleven-point scale ranging from 0 to 10. The individual's test score is calculated in three subscales: pain intensity, disability score, and degrees or levels of disability. This questionnaire has been an originally English language tool translated into Persian which has not been administered in Iran so far and requires validation (validity and reliability assessment); hhowever, the author reported the validity of this questionnaire as favorable and stated its reliability according to Cronbach's alpha above 0.9 (Von Korff, Ormel, keefe & Dworkin, 1992). Cronbach's alpha obtained in the present study for the whole questionnaire was 0.89.

The 36-item Life Quality Short Form Survey (SF-36): The purpose of this questionnaire is to assess the life quality from different aspects (physical function, role dysfunction due to physical health, role dysfunction due to emotional health,

energy/fatigue, emotional well-being, social function, pain, general health) and has 36 questions. There are 8 subscales and each subscale consists of 2 to 10 items. The alpha coefficient obtained in this study was 0.870 for the whole questionnaire, 0.72 for physical function, 0.69 for role dysfunction due to physical health, 0.71 for role dysfunction due to emotional health, and energy/fatigue. 0.68 for The coefficient was 0.73 for emotional wellbeing, 0.76 for social functioning, 0.73 for pain and 0.68 for general health.

Fibromyalgia Impact Questionnaire (**FIQ**): This questionnaire was developed to assess the current health status of women with fibromyalgia syndrome and is a self-report questionnaire assessing patient's physical functioning and work status (number of difficult days or difficult working

days), depression, anxiety, morning tiredness, pain, stiffness, fatigue and wellbeing over past weeks and includes 20 items with 11 items for physical function. The alpha coefficient obtained in this study for the whole questionnaire was 0.81.

Data Analysis

The SPSS 22 software was used for data analysis. The mean and standard deviation of the scores were utilized at the descriptive level and the ANCOVA method was used at the inferential level.

Results:

Descriptive findings were used to evaluate the mean and standard deviation of research variables. The mean and standard deviation of the study variables for the two experimental and control groups are given in Table (1).

Table 1- Descriptive findings of the study variables by experimental and control groups

| Variables | Stage | Experi | mental | Contro | l |
|--|-----------|--------|--------|--------|-------|
| | | Mean | SD | Mean | SD |
| Pain avoidance | Pre-test | 48.60 | 2.84 | 48.73 | 2.49 |
| Fain avoidance | Post-test | 21.26 | 3.88 | 48.93 | 1.66 |
| Fusion with pain thoughts | Pre-test | 29.73 | 2.01 | 29.53 | 1.80 |
| Pusion with pain thoughts | Post-test | 12.13 | 2.29 | 29.00 | 1.41 |
| Poin intensity | Pre-test | 32.13 | 3.09 | 32.60 | 3.25 |
| Pain intensity | Post-test | 14.26 | 2.98 | 31.80 | 3.00 |
| Physical function | Pre-test | 36.50 | 13.78 | 35.66 | 11.05 |
| Physical function | Post-test | 67.16 | 16.66 | 34.33 | 11.04 |
| | Pre-test | 68.33 | 33.36 | 67.00 | 25.35 |
| Role dysfunction due to physical health | Post-test | 45.00 | 15.81 | 67.44 | 21.54 |
| Dala disaffunction due to amotional health | Pre-test | 77.77 | 27.21 | 77.33 | 31.37 |
| Role dysfunction due to emotional health | Post-test | 44.11 | 19.78 | 76.44 | 20.57 |
| Engray/fotique | Pre-test | 11.16 | 5.33 | 12.16 | 4.80 |
| Energy/fatigue | Post-test | 66.33 | 12.51 | 12.17 | 4.70 |
| Emotional well-being | Pre-test | 16.85 | 9.12 | 15.52 | 7.97 |
| Emotional wen-being | Post-test | 50.93 | 11.98 | 15.03 | 7.88 |
| Social functioning | Pre-test | 14.00 | 11.98 | 16.83 | 10.87 |
| Social functioning | Post-test | 41.50 | 9.39 | 16.76 | 9.64 |
| n.: | Pre-test | 70.66 | 29.14 | 69.33 | 26.04 |
| Pain | post-test | 40.50 | 8.38 | 73.33 | 24.68 |
| General health | Pre-test | 15.18 | 6.68 | 16.45 | 7.20 |
| Ocherai health | post-test | 35.33 | 7.48 | 16.26 | 3.60 |
| Life quality | Pre-test | 67.10 | 21.43 | 67.59 | 19.55 |
| Life quanty | post-test | 81.03 | 15.84 | 70.13 | 6.69 |

According to the table above, no significant difference is seen between the experimental and control groups in the pre-test stage; however, in the post-test stage compared to the pre-test stage, scores of physical function, energy, psychological well-being, social functioning, general health and life quality have increased and the scores of pain avoidance, fusion with pain thoughts, experience of pain intensity, role dysfunction due to physical health, role dysfunction due to emotional health and pain have decreased. In this part of the research, each of the research hypotheses is examined. In order to conduct the ANCOVA test, we must initially examine the relevant assumptions, which are presented below.

The First Assumption: Kolmogorov-Smirnov test was used to evaluate the normality of pre-test distributions. The results of the Kolmogorov-Smirnov test are given in Table (2).

Table 2- Kolmogorov-Smirnov test to evaluate the normality of the pre-test of the study scales

| Variables | Type of | Value | P |
|---------------------------|-----------|-------|-------|
| | test | | |
| Pain avoidance | Pre-test | 0.192 | 0.632 |
| Fusion with pain thoughts | Post-test | 0.250 | 0.115 |
| Pain intensity | Pre-test | 0.137 | 0156 |
| Physical function | Post-test | 0.120 | 0.200 |
| Role dysfunction due to | Pre-test | 0.308 | 0.749 |
| physical health | | | |
| Role dysfunction due to | Post-test | 0.434 | 0.461 |
| emotional health | | | |
| Energy/fatigue | Pre-test | 0.308 | 0.749 |
| Emotional well-being | Post-test | 0.434 | 0.461 |
| Social functioning | Pre-test | 0.264 | 0.765 |
| Pain | Post-test | 0.161 | 0.455 |
| General health | Pre-test | 0.202 | 0.313 |
| Life quality | Post-test | 0.199 | 0.89 |

Table (2) showed that the *P* values in the Kolmogorov and Smirnov tests were greater than 0.05. According to the results, the condition for data distribution in accordance with the normal distribution and the first assumption of the ANCOVA test are observed.

Main Hypothesis 1: Acceptance and commitment therapy is effective in the intensity of pain in women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on the pain intensity in women with fibromyalgia syndrome, the results of which are presented in the table.

As the ANCOVA results show, by modifying the pre-test scores, there is a significant difference between the experimental and control groups in the post-test stage, in pain intensity scores, at the significance level of 0.05.

That is, acceptance and commitment therapy has been able to improve the pain intensity in women with fibromyalgia syndrome. In other words, according to the Eta square, 93.8% of the difference in pain scores between the experimental and control groups in the post-test phase was due to the use of acceptance and commitment therapy. The effect power obtained indicates the adequacy of the sample size.

Main Hypothesis 2: Acceptance and commitment therapy is effective in life quality of women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on life quality of women with fibromyalgia syndrome, the results of which are presented in Table (4).

According to the ANCOVA results, by modifying the pre-test scores, a significant difference is seen between the experimental and control groups in the post-test stage in life quality scores at the significance level of 0.05. That is, acceptance and commitment therapy has been able to improve the life quality of women with fibromyalgia syndrome. In other words, according to Eta squares, 84.1% of the difference in quality of life scores between the experimental and control groups in the post-test phase was due to the application of acceptance and

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|------------------------|------------|------|-----------|-------------------|----------|----------------------|
| Table 3- ANCOVA | reculte of | nain | intencity | i scores in Women | With tir | romyalota syndrome |
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| Scale | Source | Sum of squares | Degree of freedom | Mean squares | F | P | Eta | Statistical power |
|-----------|----------|----------------|-------------------------|-----------------|---------|-------|--------|-------------------|
| Pain | Pre-test | 33.204 | 1 | 33.204 | 6.052 | 0.021 | 0.183 | 0.660 |
| intensity | Group | 2249.612 | 1 | 2249.612 | 410.044 | 0.000 | 0.0938 | 1.00 |
| | Error | 148.129 | 27 | 5.486 | | | | |

Table 4: ANCOVA results of life quality scores in women with fibromyalgia syndrome

| Scale | Source | Sum of | Degree | Mean | F | Sig. level | Eta | Statistical |
|---------|----------|-----------|---------|-----------|---------|------------|-------|-------------|
| | | squares | of | squares | | | | power |
| | | | freedom | | | | | |
| Life | Pre-test | 2778.461 | 1 | 2778.491 | 0.182 | 0.673 | 0.007 | 0.070 |
| quality | Group | 21755.588 | 1 | 21755.588 | 142.834 | 0.00 | 0.841 | 1.00 |
| | Error | 41125.098 | 27 | 1523.559 | | | | |

Table 5: ANCOVA results of pain avoidance scores in women with fibromyalgia syndrome

| Scale | Source | Sum of squares | Degree of freedom | Mean squares | F | Sig. level | Eta | Statistical power |
|-----------|----------|----------------|-------------------------|-----------------|---------|------------|-------|-------------------|
| Pain | Pre-test | 13.703 | 1 | 13.703 | 1.562 | 0.222 | 0.055 | 0.226 |
| avoidance | Group | 5506.121 | 1 | 5506.121 | 627.729 | 0.000 | 0.959 | 1.00 |
| | Error | 236.830 | 27 | 8.771 | | | | |

commitment therapy. The effect power obtained suggests the adequacy of the sample size.

Secondary Hypothesis 1: Acceptance and commitment therapy is effective in pain avoidance in women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on pain avoidance in women with fibromyalgia syndrome, the results of which are presented in Table (5).

As the results of ANCOVA indicate, by modifying the pre-test scores, a significant difference is observed between the experimental and control groups in the post-

test stage in pain avoidance scores at the significance level of 0.05. That is, acceptance and commitment therapy has been able to improve the avoidance of pain in women with fibromyalgia syndrome. In other words, according to the Eta square, 95.9% of the difference in pain avoidance scores between the experimental and control groups in the post-test phase was due to the use of acceptance and commitment therapy. The effect power obtained here indicates the adequacy of the sample size.

Secondary Hypothesis 2: Acceptance and commitment therapy is effective in fusion with pain thoughts of women with fibromyalgia syndrome.

Table 6: ANCOVA results of fusion with pain thoughts scores in women with fibromyalgia syndrome

| Scale | Source | Sum of squares | Degree of | Mean squares | F | Sig. level | Eta | Statistical power |
|----------|----------|----------------|--------------|-----------------|---------|------------|-------|-------------------|
| | | | freedom | | | | | |
| fusion | Pre-test | 0.298 | 1 | 0.298 | 0.079 | 0.780 | 0.003 | 0.059 |
| with | Group | 1977.066 | 1 | 1977.066 | 526.256 | 0.00 | 0.951 | 1.00 |
| pain | Error | 101.435 | 27 | 3.757 | | | | |
| thoughts | | | | | | | | |

Table 7: ANCOVA results of physical function scores in women with fibromyalgia syndrome

| Scale | Source | Sum of squares | Degree of freedom | Mean squares | F | Sig. level | Eta | Statistical power |
|----------|----------|----------------|-------------------------|-----------------|--------|------------|-------|-------------------|
| Physical | Pre-test | 477.167 | 1 | 477.167 | 2.369 | 0.135 | 0.081 | 0.317 |
| function | Group | 8736.071 | 1 | 8736.071 | 43.363 | 0.00 | 0.616 | 1.000 |
| | Error | 5439.500 | 27 | 201.463 | | | | |

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on fusion with pain thoughts in women with fibromyalgia syndrome; the obtained results are shown in Table 6.

As the results of ANCOVA test show, by modifying the pre-test scores, a significant difference exists between the experimental and control groups in the post-test stage, in the scores of fusion with pain thoughts, at the significance level of 0.05. acceptance and commitment therapy has been able to improve fusion with pain thoughts in women with fibromyalgia syndrome. In other words, according to Eta square, 95.1% of the difference in fusion scores with pain thoughts of experimental and control groups in the posttest phase was due to the application of acceptance and commitment therapy. The effect power obtained here indicates the adequacy of the sample size.

Secondary Hypothesis 3: Acceptance and commitment therapy is effective in the physical function of women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on physical function in women with

fibromyalgia syndrome, the results if which are presented in Table 7.

As the results of ANCOVA test suggest, by modifying the pre-test scores, there is a significant difference between the experimental and control groups in the posttest stage, in physical function scores, at the significance level of 0.05. That is, acceptance and commitment therapy could improve the physical function of women with fibromyalgia syndrome. In other words, according to the Eta square, 61.6% of the difference in the physical function scores of the experimental and control groups in the post-test phase was due to the use of acceptance and commitment treatment. The obtained effect power indicates the adequacy of the sample size.

Secondary Hypothesis 4: Acceptance and commitment therapy is effective in role dysfunction due to the physical health of women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on role dysfunction due to physical health of women with fibromyalgia syndrome, the results of which are presented in Table (8).

Table 8: ANCOVA results of the scores for role dysfunction due to physical health of women with fibromyalgia syndrome

| Scale | Source | Sum of | Degree | Mean | F | Sig. level | Eta | Statistical |
|-------------|----------|-----------|---------------|-----------|--------|------------|-------|-------------|
| | | squares | of freedom | squares | | | | power |
| Role | Pre-test | 15.890 | 1 | 15.890 | 0.043 | 0.837 | 0.002 | 0.055 |
| dysfunction | Group | 14390.381 | 1 | 14390.381 | 38.916 | 0.00 | 0.590 | 1.00 |
| due to | Error | 9984.110 | 27 | 369.782 | | | | |
| physical | | | | | | | | |
| health | | | | | | | | |

Table 9: ANCOVA results of the scores for role dysfunction due to emotional health of women with fibromyalgia syndrome

| Scale | Source | Sum of squares | Degree of | Mean squares | F | Sig. level | Eta | Statistical power |
|-------------|----------|----------------|--------------|--------------|--------|------------|-------|-------------------|
| | | | freedom | | | | | |
| Role | Pre-test | 363.554 | 1 | 363.554 | 0.889 | 0.354 | 0.032 | 0.149 |
| dysfunction | Group | 16615.360 | 1 | 16615.360 | 40.621 | 0.00 | 0.601 | 1.00 |
| due to | Error | 11043.854 | 27 | 409.032 | | | | |
| emotional | | | | | | | | |
| health | | | | | | | | |

According to the table above and the results of ANCOVA test, by adjusting the pre-test scores, a significant difference is observed between the experimental and control groups in the post-test stage in the scores of role dysfunction due to physical health, at the significance level of 0.05. In other words, acceptance and commitment therapy has been able to improve the role dysfunction due to the physical health of women with fibromyalgia syndrome. That is, according to the Eta square, 59% of the difference in the role dysfunction scores due to the physical health of the experimental and control groups in the post-test phase was because of application the of acceptance commitment therapy. The obtained effect power indicates the adequacy of the sample size.

Secondary Hypothesis 5: Acceptance and commitment therapy is effective in role dysfunction due to emotional health of women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on role dysfunction due to emotional health of women with fibromyalgia syndrome, the results of which are presented in Table (9).

As the table above and the results of ANCOVA indicate, by modifying the pretest scores, there is a significant difference between the experimental and control groups in the post-test stage, in the scores of role dysfunction due to emotional health, at the significance level of 0.05. In other words, acceptance and commitment therapy has been able to improve the role dysfunction due to the emotional health of women with fibromyalgia syndrome. That is, according to the Eta square, 60.1% of the difference in the role dysfunction scores due to the emotional health of the experimental and control groups in the post-test phase was due to the use of acceptance and commitment therapy. The obtained effect power suggests the adequacy of the sample size.

Secondary Hypothesis 6: Acceptance and commitment therapy is effective on energy/fatigue in women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on energy/fatigue in women with fibromyalgia syndrome, the results of which are shown in Table (10).

Table 10- ANCOVA results of the energy/fatigue scores of women with fibromyalgia syndrome

| Scale | Source | Sum of | Degree | Mean | F | Sig. | Eta | Statistical |
|----------------|----------|-----------|---------|-----------|---------|-------|-------|-------------|
| | | squares | of | squares | | level | | power |
| | | | freedom | | | | | |
| energy/fatigue | Pre-test | 84.882 | 1 | 84.882 | 0.942 | 0.340 | 0.034 | 0.155 |
| | Group | 20466.751 | 1 | 20466.751 | 277.241 | 0.00 | 0.894 | 1.00 |
| | Error | 2431.785 | 27 | 90.066 | | | • | |

Table 11- ANCOVA results of the emotional well-being scores of women with fibromyalgia syndrome

| Scale | Source | Sum of squares | Degree of freedom | Mean squares | F | Sig. level | Eta | Statistical power |
|-----------|----------|----------------|-------------------------|-----------------|---------|------------|-------|-------------------|
| emotional | Pre-test | 0.321 | 1 | 0.321 | 0.004 | 0.949 | 0.00 | 0.050 |
| well- | Group | 9350.867 | 1 | 9350.867 | 122.782 | 0.000 | 0.820 | 1.00 |
| being | Error | 2056.276 | 27 | 76.158 | | | | |

According to the table and the results of ANCOVA, by modulating the pre-test scores, a significant difference is seen between the experimental and control groups in the post-test stage in energy/fatigue scores at the significance level of 0.05. In other words, acceptance and commitment therapy could improve the energy/fatigue of women with fibromyalgia syndrome. Therefore, according to the Eta square, 89.4% of the difference in energy/fatigue scores between the experimental and control groups in the post-test phase was due to the application of acceptance and commitment therapy. The effect power obtained here suggests the adequacy of the sample size

Secondary Hypothesis 7: Acceptance and commitment therapy is effective in the emotional well-being of women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on emotional well-being of women with fibromyalgia syndrome, the results of which are presented in Table (11).

As the results of ANCOVA show, by modifying the pre-test scores, a significant difference is observed between the experimental and control groups in the post-test stage, in emotional well-being scores, at

the significance level of 0.05. That is, acceptance and commitment therapy has been able to improve the emotional well-being of women with fibromyalgia syndrome. In other words, according to the Eta square, 82% of the difference in emotional well-being scores between the experimental and control groups in the post-test phase was due to the application of acceptance and commitment therapy. The obtained effect power indicates the adequacy of the sample size.

Secondary Hypothesis 8: Acceptance and commitment therapy is effective in the social functioning of women with fibromyalgia syndrome.

The ANCOVA was used to evaluate the effect of acceptance and commitment therapy on social functioning of women with fibromyalgia syndrome, the results of which are provided in the table below.

According to the table above and the results of ANCOVA, by modifying the pre-test scores, a significant difference is observed between the experimental and control groups in the post-test stage, in social functioning scores, at the significance level of 0.05. That is, acceptance and commitment therapy has been able to improve the social functioning of women with fibromyalgia syndrome.

Table 12- ANCOVA results of the social functioning scores of women with fibromyalgia syndrome

| Scale | Source | Sum of squares | Degree of freedom | Mean squares | F | Sig. level | Eta | Statistical power |
|-------------|----------|----------------|-------------------------|-----------------|--------|------------|-------|-------------------|
| Social | Pre-test | 0.065 | 1 | 0.065 | 0.001 | 0.981 | 0.00 | 0.050 |
| Functioning | Group | 4485.259 | 1 | 4485.259 | 41.893 | 0.000 | 0.608 | 1.00 |
| | Error | 2890.768 | 27 | 107.065 | | | | |

In other words, according to the Eta square, 60.8% of the difference in the social functioning scores of the experimental and control groups in the post-test phase was due to the use of acceptance and commitment therapy. The effect power obtained for this subscale suggests the adequacy of the sample size.

Secondary Hypothesis 9: Acceptance and commitment therapy is effective in the pain of women with fibromyalgia syndrome.

The ANCOVA test was used to evaluate the effect of acceptance and commitment therapy on pain in women with fibromyalgia syndrome, the results of which are presented in Table (13).

As the results of ANCOVA show, by modifying the pre-test scores, a significant difference is seen in pain scores at the significance level of 0.05 between the experimental and control groups in the poststage, that is, acceptance commitment therapy could improve the pain in women with fibromyalgia syndrome. In other words, according to Eta square, 58.4% of the difference in pain scores between the experimental and control groups in the posttest stage was due to acceptance and commitment treatment. The obtained effect power indicates the adequacy of the sample size.

Secondary Hypothesis 10: Acceptance and commitment therapy is effective in the general health of women with fibromyalgia syndrome.

The ANCOVA was used to evaluate the effect of acceptance and commitment therapy on the general health of women with

fibromyalgia syndrome, the results of which are presented in the table below.

With reference to the table above and the results of ANCOVA, after modifying the pre-test scores, a significant difference is observed between the experimental and control groups in the post-test stage in general health scores at the significance level of 0.05. That is, acceptance and commitment therapy has been able to improve the general health of women with fibromyalgia syndrome. In other words, according to Eta squares, 84.7% of the difference in the general health scores of the experimental and control groups in the post-test phase was due to the use of acceptance and commitment therapy. The effect power obtained for this subscale shows the adequacy of the sample size.

Discussion

In general, findings of the present study considered as an effective step to improve the mental health of women with fibromyalgia. indicated the application of ACT for psychological flexibility, pain intensity and life quality of women with fibromyalgia.

According to the main hypothesis, acceptance and commitment therapy is effective in the experience of pain intensity in women with fibromyalgia syndrome. Given the results obtained in this research, it is found that the acceptance and commitment therapy is effective in the experience of pain intensity in women with fibromyalgia syndrome.

Table 13- ANCOVA results of the pain scores of women with fibromyalgia syndrome

| Scale | Source | Sum of squares | Degree of freedom | Mean squares | F | Sig. level | Eta | Statistical power |
|-------|----------|----------------|-------------------------|-----------------|--------|------------|-------|-------------------|
| Pain | Pre-test | 728.313 | 1 | 728.313 | 1.813 | 0.189 | 0.189 | 0.225 |
| | Group | 15236.97 | 1 | 15236.97 | 37.934 | 0.00 | 0.584 | 1.00 |
| | Error | 1085.021 | 27 | 401.667 | | | | |

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|-------------------------|---------------------|--------------------|--------------|--------------|-------------------|
| Table 14- ANCOVA | Tesuits of the ger | nerai nearm scores | s of women v | WIUI HUIOHIY | aigia syllulollle |

| Scale | Source | Sum of squares | Degree of freedom | Mean squares | F | Sig. level | Eta | Statistical power |
|---------|----------|----------------|-------------------------|-----------------|---------|------------|-------|-------------------|
| General | Pre-test | 2633.150 | 1 | 2633.150 | 0.757 | 0.392 | 0.027 | 0.134 |
| Health | Group | 520747.471 | 1 | 520747.471 | 149.705 | 0.00 | 0.847 | 1.00 |
| | Error | 93919.717 | 27 | 3478.486 | | | | |

This part of the results of this study is in line with the findings of the studies conducted by Khayatan Mostafavi (2015) [13], Ebrahimi et al. (2015) [14], and Luciano et al. (2014) [15]. In explaining these findings, and as pointed out by Wicksell et al. (2013) [1], in acceptance and commitment-based approach the therapist seeks to aid the patient in identifying personal values that are considered an important path in their life (such as being a compassionate friend) and also helps the patients direct their efforts in order to achieve this goal. According to Hayes (2012) [9], negative pain-related thoughts and beliefs are strong and tend to emphasize a path that is away from positive values. Thus, by helping the patient understand and experience personal pain experiences as they are, the therapist seeks to aid patients in distancing themselves from those thoughts or neutralizing them without discussing whether the thoughts are correct or through functional analysis of the consequences of their action.

Main Hypothesis 2: Acceptance and commitment therapy is effective in the life quality of women with fibromyalgia syndrome. The results of this part of the research are directly and indirectly consistent with the findings of Sabour et al. (2016) [16], Behrouz et al. (2016) [17], Khalili (2012) [10], Sobouhi et al. 2015) [18], Luciano et al. (2014) [15], Agaglia et al. (2011) [19] and Hayes et al. (2010) [20].

In explaining these findings, it can be stated that commitment and acceptance training, which involves solving cognitive-behavioral problems, moment-by-moment awareness of emotions (mindfulness), and unconditional acceptance, causes patients with fibromyalgia strengthen the skills required to

solve physical, psychological and social problems. Since these patients suffer from cognitive multiple distortions and dysfunctional thoughts, the activation of these thoughts not only causes the person to on themselves, devaluing despairing about the future and thus reducing mood, but also has a great effect on the exacerbation of symptoms. Furthermore, since the goal of this treatment program is to create a different attitude or relationship with thoughts, feelings and emotions, it can be argued that due to the active attention of patients with fibromyalgia to the present and mindfulness, their quality of life is improved. In other words, women with fibromyalgia, who suffer from mental and physical problems caused by their disease, accept their physical and psychological feelings and symptoms during treatment sessions, and accepting and admitting these feelings excessive reduces their attention sensitivity to report these symptoms, which in turn improves their coping with their illness and personal problems and they can create clearer goals for their survival [21]. Accepting thoughts as thoughts, feelings as feelings, and emotions as emotions - as they are, no more and no less - leads to a weakening of cognitive fusion. In addition, acceptance of internal events when one is not struggling with their distress, allows them to develop their behavioral pool, and they can use the time they gain in this way to carry out valuable activities and commit their themselves to a valuable and purposeful life. Therefore, one of the important dimensions of life quality, i.e. the spiritual dimension which refers to the purpose and meaning that one attributes to their life and the values that one pursues in life, is improved.

Conclusion

Acceptance and commitment therapy has reduced the intensity of pain experience in women with fibromyalgia syndrome. Also, according to the final results of the research, acceptance and commitment therapy is effective in the life quality of women with fibromyalgia syndrome, in other words, ACT has improved the life quality of women with fibromyalgia syndrome. The practical suggestion of the research is that measuring the degree of psychological flexibility in women with fibromyalgia can have a significant effect on their pharmacological treatment process.

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