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ORIGINAL ARTICLE

Effectiveness of cognitive-behavioral group therapy on reduction of stress symptoms, and improving the quality of life in patients with Rheumatoid Arthritis

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ABSTRACT
Rheumatoid Arthritis is a self-secured and chronic disease with an unknown cause, as well as the most common rheumatic inflammatory one ever known. Generally, Rheumatoid Arthritis is two to four times more common in women as compared with men. Rheumatoid Arthritis has many physical-mental and social consequences for the patients and leaves a considerable impact on how the stricken patients live. This project has been aiming at determining how the cognitive-behavioral treatments in a group manner could decrease the symptoms of stress and improve the quality of women patients' lives who were afflicted with Rheumatoid Arthritis. The study has been carried out in a semi-experimental manner with a pre-test, post-test and following-up with Shahed Group. The case included 56 women patients who were diagnosed to be suffering from Rheumatoid Arthritis and were randomly selected and placed in two Testing and Shahed Groups. All the patients filled out the questionnaire of Stress (Harry) and measuring criteria of life quality affected by Arthritis 2- AIMS2-SF. Short forms, both prior and after their intervention and also during a two-month perusal. The cognitive-behavioral treatment was performed during eight two-hour sessions, basing the structure on Testing Group and both groups received the medical common treatments during this period as well. The data was analyzed using the Co-variance analysis test. The results have been suggesting the efficacy of group treatment, with a cognitive-behavioral approach towards decreasing the level of stress and improving the quality of women patients' lives afflicted with Rheumatoid Arthritis which can be effective in decreasing the stress in such patients as a side treatment beside other standard treatments of Rheumatoid Arthritis.
***Keywords**: Rheumatoid Arthritis, stress, life quality, cognitive-behavioral treatment*

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INTRODUCTION

Rheumatoid Arthritis is a systemic disease which causes the increase of Synovial and destruction of cartilages and bones. The disease which has almost always had multi causes impresses both the big and small articulations. Since Rheumatoid Arthritis has a regulated inflammation, it is distinguished by tiredness, indisposition and depression.
At this point disability as a result of the pain and articular destruction is occurred.
1- Rheumatoid Arthritis is the most common chronic articular inflammation disease that affect 1 to % 5 of the population.
2- In recent years, treating strategies have not been merely relying on physical treatments such as medicine therapy, rather, psychological treatments has also been increasingly considered and used.
Arthritis is neither evitable nor curable with medical and behavioral interventions, instead, Arthritis can be an inevitable disease with periods of spontaneous relapse and recovery of disease symptoms and often has an indeterminate course.
3-That is why Weiner et al [1] presents the patients stricken with Arthritis as individuals beset with doubts, who are expecting for periods of more extensive recovery, while they are themselves absolutely conscious of possibility of deterioration of disease symptoms as well.

4-The patients stricken with Rheumatoid Arthritis are psychologically feared about long-term pain, stiffness of their bodies and over-tiredness. Many of them are worried about articular deformities especially in hands.
They are actually concerned about losing their performance, occupational disability and probable social-economic effects caused by a disease. The potential poisoning caused as a result of the long-term treatment by medicines is also a main concern.
5- Studies indicate that Rheumatoid Arthritis is related with pysycological problems of stress and based on careful and conservative assessment; the out break of 13 to 20% of stress cases has been reported among patients stricken with Rheumatoid Arthritis.
6- The interrelationship between symptoms of stress and Arthritis has been controlled by these assessments.
7- Stress is the most common psychological responses of the patients stricken with Rheumatoid Arthritis. Also some factors such as sexuality of women, little age for distinguishing.
8- Personal characteristics such as low self-respect, feeling unprotected, avoiding confrontation and poor concordance with diagnosis of disease have been known to be involved in aggravating symptoms of stress. The patients stricken with Arthritis who have to challenge with the losing of their function as well as recurrent and painful relapses caused by the disease may be among the most vulnerable individuals towards destructive consequences of stress in life.
9- Also more perceptual disability in confrontation with stress-producers has been related to poorer mental health as well as more proportions of fluid B cells in patients afflicted with RA. External stress-producers as external symptoms effect their influence through modifying the internal messages such as hormonic symptoms following which the internal psychological state is changed. Most of the past researches on stress have been focusing on Hypothalamus, Hypophysis and Adrenaline and the role they each played in security performance.
10-Stress which also includes social stress, impresses the central security system and causes prolactin and adrenocorticotropin as well as Cortisol releasing Hormones to exude from Hypophysis and Cortex Adrenal glands respectively.
11- Cortisol suppresses the cellular safety function and consequently decreases inflammation in healthy people, while PRL is stimulating. These conflicting functions and also the function of Gonadal steroids leads to a safety response to be regulated in a Homeostatic point.
However, since RA is actually a self-secured systemic disturbance, Homeostatic mechanism which normally regulates safety and inflammation may not function completely. The presence of dysfunction in the system may signify that RA would be specifically responding to psychological social stresses by exuding a hormone which would probably cause the safety activity to be increased and more symptoms of disease to be manifested.
Long-term stress has been realized to be one of the most common causes of diseases such as hypertension as well as other heart diseases. It is believed nowadays that long-term stress may increase the risk of being afflicted by psycho-mental diseases. Also behavioral changes, caused by stress are directly related to a decrease in a certain level of physical health. Since the disease has a chronic, achy and debilitating nature, it may have deep impacts on the quality of life.
Studying the quality of life from various points of view and aspects has shown that such a situation does not merely cause a physical limitation but also puts an effect on other aspects of life quality such as a psychological and social functions as well.
12. Physical disorders and the existence of physical characteristics have direct effect on all aspects of life quality and physical characteristics are by themselves
13. Rheumatoid Arthritis symptoms appear in form of ache, swelling, tiredness, moving disability and stiffness of articulations.
14. These patients usually have disorders in their physical, social, mental and emotional functions disorders due to physical ache, tiredness, moving disability as well as daily activities.
15. Few researches have been conducted on the concept of life quality of patients afflicted by Rheumatoid Arthritis in Iran and that which symptoms of the disease are more effective on the aspects of their lives' quality and causes some changes in the quality of their lives. Therefore the present research seeks to survey the effect of intervening treatments of decreasing stress on the symptoms of the disease as well as the quality of lives of the patients who refer to the hospitals in the city of Isfahan.
Cognitive-behavioral offers guiding instructions and practices which help individuals to master over different skills such as self-observation, serenity , diaphragm respiration , caring , visual imagery , disregarding, solving of problems and goal-setting . The main purpose of stress management includes decreasing the stress, which is finally expected to lead to controlling of symptoms (like an ache) as well as improvement of performing consequences (like psychological or physical functions).

16. The techniques and methods used in treatment group in this research in a cognitive-behavioral manner includes providing information regarding stress, emphasizing on cognitive-behavioral pattern , soothing training , cognitive assessments , confrontation , expressing one's presence as well as controlling anger.

Regarding the interrelationship between the level of stress and greatness of disease and respecting the role these factors play in physical and mental health as well as the quality of everyone's life, especially patients afflicted with Rheumatoid Arthritis , it seems that if we can measure , prove and control the effect of these factors on the greatness and high level of disease properly , it could be contributing to the improvement of mental health and probably improvement of physical conditions in these persons , through offering psychological facilities and treatments, beside medical normal interventions.

SURVEY METHOD

This research is of experimental type and has been conducted by the pre-test, post-test plan and through following up with two Test and Control groups. The statistical community is composed of all women patients afflicted with Rheumatoid Arthritis in the city of Isfahan who have the standard requirements for participating in this project, are between 16-18 ranges of age, have finished guidance school, who've been patient for 1 year , are free from any mental problems ever known such as depression or have been under treatment by mind-blowing drugs before being afflicted by Rheumatoid Arthritis disease , have been under drug treatment in the hospitals of city of Isfahan during the first quarter of the year 2013 and had symptoms of stress above the average level.

During the research, the available sampling method was first used in such a manner that the researcher assessed those patients who had been suffering from Rheumatoid Arthritis at least for one year and through interview and DASS-42 questionnaire and psychologically at the discretion of the centre's Rheumatologist and based on laboratory tests as well as clinical surveys.

Those patients who had symptoms of stress along with other required standards for entering were selected as subjects and finally 56 men and women patients from those referring to these centers were divided into two testing groups randomly.

In this plan independent variables contained eight cognitive-behavioral treatment sessions and the dependent variable included stress and life quality which was carried out in form of a group, that is, Test Group. Then it's effect on pre-test marks in the patients of Test Group was surveyed and compared with that of Control Group.

Each session of treatment contained two sections:

Serenity and cognitive-behavioral treatment in such a way that first the subjects learned techniques of serenity and after a rest for 30 minutes , the second section would begin which consisted of teaching cognitive-behavioral including providing information in relation with stress , emphasizing on cognitive-behavioral pattern , cognitive assessments , confrontation ,expressing one's presence as well as controlling anger. All the sessions were held in order to teach and train the techniques of serenity in an open and convenient space which possessed desirable conditions and cognitive-behavioral techniques were also held in another place (A hall with rather comfortable seats and an open environment having a convenient air-condition) so that there would be maximum harmony with requirements for treatment plans. The method of collecting data in this research includes; question and reply, self-reporting as well as means for gathering data, containing Harry stress questionnaire which has been developed by Dr. S. Chandran Harry in the year 2005 for assessing mental pressure in different situations of life. Harry stress questionnaire is composed of 66 statements. The replies of this test cover 1 to 5 in a LIKERT 5-degree spectrum. Of course in some statements putting marks is carried out conversely.

The internal uniformity of the questionnaire is 0.74 and the time constancy of the questionnaire for a 50-person sample has been gained the unity coefficient of 0.79 in a month's period in the re-test method. The content of questionnaire has been credited through offering that to the academics, specialized in psychology from Britain universities who had specialty and experience in the field of mental pressure. Out of 110 statements which had been studied carefully by them 66 cases which had assessed the best symptoms of stress were given the highest score and mentioned statements were selected. Generally, the test is an appropriate tool for realizing the level of mental pressure in individuals. The test has also been reported by Harry in form of a re-test for determining the constant coefficient in a period of ten days for a group of women and men during the two holdings of the test which were 84 and %81 respectively.

Another questionnaire reported by Harry is the measurement for assessing the quality of life, that is, the effect of Arthritis 2 is AIMS2-SF short form which is devoted to the health conditions of patients afflicted with Arthritis which can assess the physical , mental and social health . The short form of this tool contains 26 questions which would survey the mental effect of the disease during the last month and contains 5 sub-measurements , consisting of physical function (Moving and self-care) , emotion (Level of

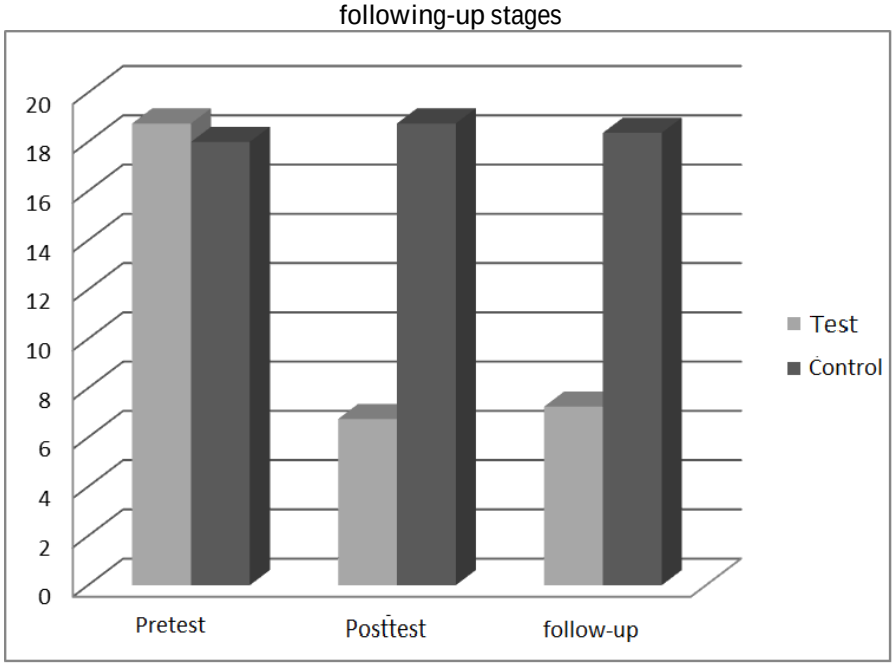
behavior) , symptoms (Ache) , social interaction (Family and friends) , as well as the function in one's role (Capability of working) . Low scores in these sub-measurements indicate high level of health condition. 17- This tool has a good constancy in which the Crownbach Alpha of the measurements ranges between 0.78 to 0.94. A constancy coefficient of the test --- The re-test stands between 0.78 to 0.94. The reliability of the tests was realized with respect to the significance of this test compared with the functional changes in patients following treatment with antinflammatory, anti-steroid drugs as well as high interrelationship of this test with the results of studies about physical matters.

FINDINGS

The results having been gained in this research suggest that the observed frequencies are close to one another from the age, level of education, and duration of the disease of the Test and Control groups aspects and there's no significant difference between the groups in terms of age, and the distribution of individuals in different levels of age in both Test and Control groups is the same .the value having been observed doesn't suggest a meaningful difference between the two groups. The descriptive characteristics of the stress dependent variable in separation of each group and in three stages of pre-test , post-test and following-up indicate that total average of stress scores in Test group in pre-test stage is equal to 18.75 with criteria deviation of 2.12 which is decreased to the criteria of 6.75 with criteria deviation of 3.39 after the intervention and in the pre-test , so the criteria is presently in the two-month following-up stage of 7.25 with criteria deviation of 2.18 .

The total average of stress scores in the pre-test stage in Control group is 18 with a deviation criteria of 3.02 while in post-test and two-month following-up stages total average of stress score with criteria deviation stands at 18.75 and 2.60 and 18.37 and 1.68 respectively. Meanwhile the average scores of stress in different groups have been compared as indicated in figure 1.

Figure 1. The comparison of average scores of stress in the two groups in pre-test , post-test, and following-up stages



On the other hand, descriptive characteristics of variable sub-measurements of life quality for the two groups in three pre-test, post-test and following-up stages indicate that the total average of all the scores for the physical conditions of Test group in pre-test stage is equal to 4.88 with criteria deviation of 0.82, which is decreased to 2.07 with criteria deviation of 0.63 following intervention and during post-test. The criteria would be 2.08 during the two-month following-up with criteria deviation of 0.77. In control group, total average of scores for physical conditions has been gained as 4.84 with criteria deviation of 0.75, 4.78 with criteria deviation of 0.73 and 4.64 with criteria deviation of 0.50 in the pre-test, post-test and two-month following-up stages respectively. In order to determine the relation between dependent variables and variables for demography, direction in which control variables for simple cohesiveness between variables exist, has been calculated accordingly. Other demographic variables such as sex and status of marriage had already been surveyed and controlled in the groups. There's a logical relation

between education with stress (p= 0.000) and duration of the disease with stress (p=0.0001) .Also there's a conceptual cohesiveness between age, education and duration of disease and physical condition and the levels of meaningfulness are (p=0.008) , (p=0.05) and (p=0.0001) respectively.
The preconception of distributing pre-test stress variable scores and variables for quality of life in two Test and Control groups being normal is approved (p -> 0.05) . During the research Co-variance analysis method was applied so as to analyze the research hypothesis inferentially. The post-test scores and following up dependent variables were of high consideration in each variable and in order to control the effects of pre-test variables as well as those having a meaningful cohesiveness along with dependent variables, (as an accompanying variable)on pre-test and following-up scores , multi-variable Co-variance analysis method has been used. On the whole there's a meaningful difference between the groups (p=0.001). So the general supposition based on that there's a meaningful difference between sentroid of post-test scores and following up the stress of attribute, stress of attitude as well as the stress of Test and Control groups is confirmed. The treating intervention is % 96 effective, indicating that 96 per cent of Variance for the scores of two groups is as a result of their membership in the group. The statistical capability is 1 which indicates the sufficiency of the sample amount as well as the acceptable precision of the test and that it was unlikely that ZERO supposition would have been wrongly approved (Chart 1).

Chart 1: The consequence of the effect of group membership on average of post-test scores and following up the stress measurement

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Variable / Indices - Landay Wilkez value – F- The degree of supposition freedom - The degree of error freedom - Meaningfulness- the level of effectiveness - Statistical capability

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Stress pre-test –

Education

Duration of disease

Group membership

Table 1: The influence of group membership on the average post-test and follow-scale stress

Statistical power	Effect size	Significant	Degrees of freedom error	Degree of freedom hypotheses	F	Wilks Lambda value	Indicators / Variable
0.242	0.359	0.710	53	54	2.470	0.412	The stress test
0.569	0.722	0.062	53	54	4.36	0.178	Education
0.413	0.579	0.055	53	54	3.98	0.225	Disease duration
1	0.967	0.001	53	54	38.6771	0.032	Join a group

For further and more precise survey of the intervention effects Co-variance analysis was utilized and the results showed that there was a meaningful difference between post-test scores and following up stress in Test and Control groups (P=0.0001) . ATA coefficient indicates that 91 per cent of difference between the scores in the stress post-tests are related to group membership or the effect of treating intervention and that the Statistical capability 1 suggests the sufficiency of the sample amount as well as the precision of the test. Also there's a meaningful difference in the following-up stage (p=0.0001) .
ATA coefficient indicates that 89 per cent of difference between the scores of stress following-up is related to group membership with the effect of treating intervention and the Statistical capability is 1 as well. The findings suggest that the group treating intervention in a cognitive-behavioral manner has been effective on the level of stress symptoms in the patients of Test Group during the post-test stage and the effect has also been left in the following-up stage (Table 2) .

Table 2: The results of Co-variance analysis about difference between groups on post-test and stress following-up scores

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Source of changes - Stages / Indices – Freedom degree – Average of Squares - F – Meaningfulness - Level of effectiveness – Statistical capability

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Pre-test - Post-test - 1- 11/321 – 2/30 – 0/135 - 0165 – 0.314

Stress - 2 month following-up

Post-test

Education

2 month following-up

Post-test

Duration of disease

2 month following-up

Post-test

Group membership

2 month following-up

Table 2: Results of analysis of covariance between groups on post-test and follow-stress

Statistical power	Effect	Significant	F	Mean square	Degrees of freedom	changes / Stage	Power indicator
0.314	0.165	0/135	2/30	11/321	1	Posttest	The stress test
0.247	0.132	0/182	2/11	8/46	1	2-month follow-up	
0.221	0.115	0/341	1/18	9/87	1	Posttest	Education
0.617	0.342	0/033	6/03	8/81	1	2-month follow-up	
0.211	0.115	0/237	1/55	10/80	1	Posttest	Disease duration
0.518	0.336	0/030	6/05	9/33	1	2-month follow-up	
1.000	0.913	0/000	198/43	982/87	1	Posttest	Join a group
1.000	0.898	0/000	161/98	825/21	1	2-month follow-up	

Regarding the effect of group membership on cognitive-behavioral treating intervention in improving the quality of lives of the patients afflicted with Rheumatoid Arthritis, the consequences of the surveys indicate that the difference between groups would be generally meaningful, when the pre-tests as well as the three Demographic variables which are cohesive with dependent variables are controlled (p=0.001). Therefore the general supposition based on that there is a meaningful difference between the Sentroid of scores in the Post-test stage and the following- up of all sub-measurements for life quality of the Test and Control groups is hereby confirmed.

Here the level of treating intervention effectiveness is 0.95 indicating that 95 per cent of the scores variance of the two groups is due to membership of individuals in the groups.

The statistical capability is 1, suggesting the sufficiency of the sample amount and acceptable precision of the test and that it was unlikely that Zero Supposition would have been wrongly approved (Table No.3).

Table 3: The consequence of the effect of group membership on average of post-test scores and following up the sub- measurements of life quality

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Variables/Indices - Landay Wilkez value – F- The degree of supposition freedom - The degree of error freedom - Meaningfulness- the level of effectiveness - Statistical capability

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Pre-test for physical condition

Pre-test of symptoms

Pre-test of emotions

Pre-test of social interaction

Pre-test of function in one's role (Working)

Group Membership

Age

Education

Duration of disease

Chart 3: The influence of group membership on the subscale QOL scores of post-test and follow-up

Statistical power	Effect size	Significant	Degrees of freedom error	Degree of freedom hypotheses	F	Wilks Lambda value	Indicators / Variable
0.357	0.317	0.612	53	54	1.943	0.407	Pretest physical
0.344	0.377	0.513	53	54	1.644	0.460	Pretest Syndrome
0.267	0.609	0.431	53	54	1.470	0.398	Pretest emotions
0.381	0.53	0.367	53	54	0.601	0.767	The social interaction test
0.610	0.741	0.678	53	54	0.608	0.218	Pretest performance in the role (work)
1	0.959	0.001	53	54	2894.37	0.021	Join a group
0.276	0.618	0.546	53	54	0.895	0.342	Age
0.673	0.852	0.053	53	54	4/78	0.148	Grade
0.712	0.654	0.453	53	54	3.463	0.198	Duration of illness

DISCUSSION AND CONSEQUENCES

Managing a chronic disease is one of the main challenges for global health maintenance in 21st century. The global Health Organization estimates that depression disturbances, following the Ischemic heart diseases is the second global common disease. 19- The global outbreak of Rheumatoid Arthritis is nearly % 1 , but there's a genetic background of that in almost % 34 of the individuals in the society. The cause of this disease is sufficiency or lack of Neuroendocrine axis, that is Hypothalamus – Hypophysis – Adrenal). What is wiped out in Neuroendocrine axis is the stress wave which is considered itself as a starting factor for the disease, thus the stable stresses both start and cause the diseases to be constant, while unstable stresses may cause the disease to create but then start to recover once the stress is stopped and the

course of the disease is forgotten, unless another stress causes the disease to be durable. Chronic disease including Rheumatoid Arthritis is the main cause for most of the disabilities especially during the adulthood. There are various symptoms which can leave irreparable effects on the life quality of the patients afflicted with Rheumatoid Arthritis such as ache, over-tiredness and moving disability. The society under study has been married women in this research, therefore over-tiredness and pain would have undesirable effects on their daily lives. The existence of stress in rheumatoid patients indicates the activity of the disease and would disturb the quality of their lives. Having measured the level of stress and the interaction it leaves on all aspects of the life quality in women patients afflicted with Rheumatoid Arthritis, and then performing some group interventions for cognitive-behavioral treatment, in this research we have managed to decrease the stress variable in such patients and stabilize a desirable level for that which is according with their daily routine after the course of treatment. The results gained from this research corroborate this idea that stress can play an effective role in continuity and constancy of RA disease and the manner in which we respond to treating this disease as well as the symptoms it has in advance.

Considering the results having been gained, the difference of the averages for two Test and Control groups , both during pre-test and two-month following-up stages would be meaningful ($p<0.0001$) in such a way that the level of effectiveness is 91 and 89 per cent in pre-test and two-month following-up stages respectively. These findings are in the same direction with those of researchers such as [2-6].

Stress is one of the most common factors of creating anxious disorders and mainly one of the most common causes for making disability in referring to treating centers through a society Huyser and Parker [7]. Researchers conducted by other researching centers indicate that stress can be effective in creating a disorder just as it's constancy can put an effect in the course of treating the disease or causing it to relapse [8] .Studying the clinical and preclinical findings in a statistical comparing approach revealed that the group that was under cognitive-behavioral treatment for decreasing the stress symptoms, as compared with the Controlling group which received no cognitive-behavioral treatment, showed a better course of disease as well as responding to treatment. On the other hand, the effect of cognitive-behavioral treating intervention on improving the physical conditions in patients with Rheumatoid Arthritis by the role the stress plays in creating and aggravating the symptoms of disease and through the impact it has in the course of psychological disturbance on safety function as well as on symptoms of the disease was confirmed in this research. Also the difference of the average for the post-test scores and following up the physical functions in the Test and Controlling groups is meaningful ($p=0.008$) , the difference of the average for the scores of Emotions, symptoms, improvement of the social interaction as well as functioning in the role of Test and Controlling group during the post-test stage is meaningful ($p=0.0001$) and during following-up stage the difference between the two groups is logical and meaningful ($p=0.0001$) in such a manner that 78, 74 , 84 , 79 and 80 per cents of the differences respectively are due to the membership of individuals in the group and the Statistical capacity is 1.

These findings are concordant with the research that was conducted by Evers *et al* [9] using cognitive-behavioral , anxious treating methods for curing 64 patients with Rheumatoid Arthritis , who studied their psychological profiles during 10 weekly meetings and 4 weeks after the treatment was finished their results showed the improvement of physical , psychological and social functions in patients.

The studies generally showed that stresses play a significant role in the appearance of RA and its constancy in such a way that the unpleasant impact of this factor can be effective in indices like health, continuation of disease and the life quality of women patients with Rheumatoid Arthritis. Although the patients are presently provided with appropriate treatments, we can't see any remarkable improvement in patients and we need to struggle and remove the causes of stress in order to counter this problem.

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