

Effect of Stress Management on Quality of Life in Females with Rheumatoid Arthritis

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Abstract

Background: Rheumatoid arthritis (RA) is a systemic and immunologic disorder, which is characterized with feet, wrist and knee inflammatory destruction and morning stiffness. It mainly results in joint deformity and reduced ability, which can propagate into low quality of life (QOL). Recently, QOL has been demonstrated as one of the most important factors in male's life and studies have showed the negative effect of physical and emotional stress on QOL.

Objectives: This study aimed at evaluating the effect of stress management on QOL in females with RA referring to Baqiyatallah hospital during years 2012 to 2013.

Methods: Fifty female patients with RA that had referred to Baqiyatallah hospital between March 2012 and March 2013 were evaluated in 2 equal groups, matched by age. The patients were enrolled conveniently. The intervention group members were trained with a 10-session stress management program and the control group did not undergo any intervention. The world health organization quality of life (WHOQOL-BREF) questionnaire was filled-out by both groups ($\alpha = 0.641$) and the results were compared by suitable statistical tests.

Results: Significant difference was observed in QOL between the intervention and control groups (effect size of $d^2 = 0.845$). No significant difference was seen in mean QOL results in early post-test and late follow-up test; however, a significant difference was seen between post-test and pre-test in the intervention groups ($P < 0.05$).

Conclusions: This study demonstrated that stress management could benefit QOL in RA patients. The results suggest that the stress management package can be beneficial in these patients along with other medications.

Keywords: Rheumatoid Arthritis, Stress Management, Quality of Life

1. Background

Rheumatoid Arthritis (RA) is a systemic disease with unknown etiology. It is characterized with symmetrical, permanent, and destructive inflammatory synovitis. However, its severity depends on genetics and socio-economic patterns. The patients are usually between 25 and 50 years old with a male to female ratio of 1:3 (1-3). There are nearly half a million patients with RA in Iran (4). As joints are among the most important components of the body and are involved in daily activity, RA is associated with reduced Quality of Life. Therefore, endeavors have been made to evaluate and reduce patients' inabilities (5, 6).

Based on world health organization's (WHO) definition, quality of life is "A state of complete physical, mental, and social well-being not merely the absence of disease". This means that the measurement of health and the effects of health care must include both an indication of changes in the frequency and severity of diseases and an estimation of well-being, and this can be assessed by measuring im-

provement in the quality of life related to health care (7).

In psychology, stress is a feeling of strain and pressure. Symptoms may include a sense of being overwhelmed, feelings of anxiety, overall irritability, insecurity, etc. It may also cause more serious conditions such as cardiovascular disease. Furthermore, stress is related to negative effects on patients. It has been shown that stress contributes to the initiation and development of specific diseases, however, chronic diseases (such as RA) are associated with higher stress and this vicious cycle can worsen the disease and increase stress (8).

Although, small amounts of stress may be desired, beneficial, or even healthy, higher amounts of stress can reduce mood and patients quality of life over time (8). Regarding this information, there are several cognitive-behavioral methods, which can help people reduce the amount of stress by controlling their environment and their stability (2-5). Stress management systems, using cognitive-behavioral methods, could help patients recog-

nize, evaluate, and omit stress-full events from their lives and maintain in a more stable situation (6, 9). Studies have demonstrated that omitting and controlling stress can improve the course of chronic illnesses and help patients cope with their disease.

2. Objective

Therefore, this research attempted to determine the effect of stress management system (based on cognitive-behavioral methods) on controlling stress and quality of life in females with RA that had referred to Baqiyatallah hospital during years 2012 and 2013.

3. Materials and Methods

This was a non-randomized or quasi-experimental study on 150 conveniently selected females with RA referred to the rheumatology ward of Baqiyatallah hospital (Tehran-Iran) between March 2012 and March 2013. The patients were diagnosed by a rheumatologist using physical examinations and para-clinical tests. Furthermore, a 12-month gap was allocated between diagnosis and the study initiation for treatment stability. Patients with known chronic diseases rather than RA and psychological disorders were excluded from the study. Demographic information was gathered and documented in a researcher provided checklist (age, education, marital status, residency, and disease duration). At the end, 50 patients, with the mentioned inclusion criteria, were included in the current study. Patients with severe acute diseases and sudden physical or psychological stress during the study were excluded.

All patients filled out the WHOQOL-BREF (a brief questionnaire of WHOQOL-100) before starting the program. The Persian-translated questionnaire was used, which was evaluated and validated by Yousefy et al. with Cronbach alpha of 0.76 to 0.82 (10).

The patients were divided to 2 groups of 25; intervention (with stress management educational package) and control (without any intervention). Patients were allowed to freely choose their group at the start of the study. In the intervention group, after explaining the protocol, the stress management educational program with cognitive-behavioral methods was applied in 10 separate sessions consisting of the following stages, 1- introduction, 2- stress recognition and signs, 3- stress criteria and levels, 4- stressors, 5- confronting Stresses, 6- recognizing stress-prone individuals, 7- recognizing stress reducer tools, 8- stress reducing guidelines, 9- stress reducing skills, and 10- the relationship between stress and chronic illnesses such as RA.

All sessions were held publicly. In the control group, the researchers only explained some general information without any intervention.

The intervention group was evaluated for QOL twice; 2 days and 1 month after the end of the last session.

3.1. Ethical Considerations

The information of all patients was confidential; all individuals participated anonymously and the data were expressed as a whole. After discussion about the aim of this study, a written informed consent was taken from the patients before any data collection. No safety or medical procedures were neglected and the researchers were bind to the declaration of Helsinki ethical codes. This study was approved by the ethics committee of the Faculty of Medicine.

3.2. Statistical Analysis

All Quantitative data were expressed as mean \pm standard deviation (SD) and tested for normality by the Kolmogorov-Smirnov test. Qualitative data were demonstrated by frequencies and percentages. For further analysis, independent sample t test and chi-square were executed for comparing means between the 2 groups. Also, paired t test was used for pre- and post-test in both groups. A P value of less than 0.05 was considered as significant. Data were analyzed by SPSS version 20.0 (SPSS, Inc., Chicago, IL, USA).

4. Results

All demographic data are summarized in Table 1. The groups were matched for age, literacy, marital status, and place of residence. Mean WHOQOL-BREF pre-test score was 88.62 ± 5.41 and 87.0 ± 6.59 for intervention and control groups, respectively; with no significant difference ($P > 0.05$). Mean WHOQOL-BREF post-test score was 116.87 ± 9.90 and 81.58 ± 7.92 for intervention and control groups, respectively, with a significant difference ($P = 0.0001$). By eliminating the pre-test confounder effect, there was a significant difference between the 2 groups' post-test results (119.25 vs. 79.2 ; $P = 0.0001$, $r^2 = 0.845$) (Table 2), which demonstrates that stress management could increase the variance of QOL in RA patients by 84%.

The intervention group was followed 1 more times per month after the last session. The mean WHOQOL-BREF score was 118.87 ± 8.76 . There was no significant difference between post test and follow-up test results, demonstrating a steady state after the study ($P = 0.001$ and effect size = 0.918).

Table 1. Demographic Data of the Patients Included in the Study^{a, b}

	Intervention	Control	P Value
Age	42.12 ± 10.47	44.98 ± 9.11	0.638
Education			0.857
Illiterate	2	3	
Nonacademic	18	16	
Academic	5	6	
RA duration	-	9.87 ± 1.11	
Smoking	5 (20)	6 (24)	0.557
Married	20 (80)	19 (76)	0.456
Living Place			0.412
Rural	7 (28)	9 (36)	
Urban	18 (72)	16 (64)	

^aValues are expressed as mean ± SD or No. (%).

^bNone of the parameters differed significantly between groups.

Table 2. Quality of Life in Females with Rheumatoid Arthritis in Pre-Test and Post-Test and With Eliminating the Effect of Pre-Test^a

	Pre-Test		Post-Test		P Control	P Intervention
	Control	Intervention	Control	Intervention		
Mean ± SD	87 ± 6.5	88.62 ± 5.5	81.58 ± 7.9	116.78 ± 9.9	0.111	< 0.001
Min-Max	75 - 98	70 - 92	68 - 95	100 - 136		
After correcting By Pre-test			79.2	119.25		
P value	0.637		< 0.001			

^aSignificant differences were seen between RA patients' pre-test and post-test; and post-test between intervention and control patients.

5. Discussion

Rheumatoid Arthritis is a multi-systemic disease, which effects all races and is found all over the world. Physical inability is one of the most important components of treatment, however, psychological burden has been discussed in the recent years. Rhee et al. demonstrated that mood disorders are present in more than 70% of the patients suffering from RA (11). In another study, RA was associated with stress, anxiety, and depression (2). Waheed et al. demonstrated that all rheumatologic disorder patients have at least one psychological disorder due to the chronic course of the disease (12). As indicated by the literature, most studies have considered the physical aspects of diseases. Therefore, efforts on other aspects of chronic diseases are of a high priority.

There are studies, which have demonstrated the effect of physical and emotional stress on chronic disease; all of which showed that an increase in stress is associated with poor prognosis. On the other hand, using self-evaluating

stress management could increase mood, stability, and shortening of disease course. For example, in the author's previous studies (13-16), stress management programs had a lowering effect on anxiety, depression, and RA symptoms. Other studies have demonstrated the same results (10-13).

In this study, the stress management educational program was evaluated regarding cognitive-behavioral methods on QOL in RA patients. The results indicated higher QOL after 2 days and at least 1 month after the program in comparison to the control group. These results can suggest the efficacy of the Stress Management educational program as a co-treatment with conventional medication. These results were positively comparable with the studies of Waheed et al. (12), Dehghani et al. (17), Anthony et al. (18), and O'Donnel et al. (19).

The theory behind this study is a well-known vicious cycle; RA patients have negative views about their abilities and thus withdraw from normal activities. This becomes a new stress and results in depression, low mood, and low compliance in drug consumption. Chronic diseases (such

as RA) exacerbate and make the patients more prone to complications and lead to withdrawal from the society and greater stress. Breaking this cycle can be as effective as medication, regarding similar results (12-17).

There are many stressors, which can effect hormonal imbalance and nervous system activities as well as immunologic reactions. This means that stress can have negative effects on infectious diseases and rheumatologic disorders. There are studies, which have demonstrated that physical and emotional stresses could interfere with treatment of chronic diseases such as cancer, allergies, and life-threatening infections. Stresses can target central and autonomic nervous systems, leading to adrenalin and corticosteroid release, which results in higher pain and lower QOL. Patients can identify stresses by stress management educational programs with cognitive-behavioral methods and work towards eliminating them. In other words, lowering stress in chronically ill patients could improve their illness and QOL together (12-16).

Although the current study was well designed, it had some limitations. Females were selected as samples due to their higher prevalence in the population; however, generalization to male subjects needs further investigations. On the other hand, patients were only selected from one center, thus further studies with a larger sample size and multiple centers is required. Using other behavioral methods rather than the Stress Management educational program regarding cognitive-behavioral methods and evaluating other chronic disorders may be reasonable suggestions for further studies.

5.1. Conclusions

The results demonstrate that stress management education could improve RA severity and QOL of patients. This protocol is recommended alongside drug-therapy in chronic illnesses such as RA.

Footnotes

Authors' Contribution: Gholamhossein Alishiri and Seyed Hassan Saadat conceived and designed the evaluation. Seyed Hassan Saadat, Raheleh Bastani, and Khodabakhsh Ahmadi collected the clinical data. Seyed Hassan Saadat, Gholamhossein Alishiri, and Khodabakhsh Ahmadi interpreted the clinical data. Khodabakhsh Ahmadi and Seyed Hassan Saadat performed the statistical analysis. Raheleh Bastani and Seyed Hassan Saadat drafted the manuscript. Gholamhossein Alishiri and Khodabakhsh Ahmadi revised the manuscript critically for important intellectual content. All authors read and approved the final manuscript.

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References

1. Fauci AS. Harrison's principles of internal medicine. 2. Mcgraw-hill New York; 1998.
2. Fitzgerald D, Lucas S, Redoblado MA, Winter V, Brennan J, Anderson J, et al. Cognitive functioning in young people with first episode psychosis: relationship to diagnosis and clinical characteristics. *Aust N Z J Psychiatry*. 2004;**38**(7):501-10. doi: [10.1080/j.1440-1614.2004.01403.x](https://doi.org/10.1080/j.1440-1614.2004.01403.x). [PubMed: [15255822](https://pubmed.ncbi.nlm.nih.gov/15255822/)].
3. Kang S, O'Reilly M, Rojeski L, Blenden K, Xu Z, Davis T, et al. Effects of tangible and social reinforcers on skill acquisition, stereotyped behavior, and task engagement in three children with autism spectrum disorders. *Res Dev Disabil*. 2013;**34**(2):739-44. doi: [10.1016/j.ridd.2012.10.007](https://doi.org/10.1016/j.ridd.2012.10.007). [PubMed: [23220050](https://pubmed.ncbi.nlm.nih.gov/23220050/)].
4. Monjamed Z, Razavian F. The impact of signs and symptoms on the quality of life in patients with rheumatoid arthritis referred to the hospitals of tehran university of medical sciences in year 2005 [In Persian]. *Qom Univ Med Sci J*. 2007;**1**(1):27-35.
5. Kekow J, Moots R, Khandker R, Melin J, Freundlich B, Singh A. Improvements in patient-reported outcomes, symptoms of depression and anxiety, and their association with clinical remission among patients with moderate-to-severe active early rheumatoid arthritis. *Rheumatology (Oxford)*. 2011;**50**(2):401-9. doi: [10.1093/rheumatology/keq327](https://doi.org/10.1093/rheumatology/keq327). [PubMed: [21059675](https://pubmed.ncbi.nlm.nih.gov/21059675/)].
6. Baraniak A, Sheffield D. The efficacy of psychologically based interventions to improve anxiety, depression and quality of life in COPD: a systematic review and meta-analysis. *Patient Educ Couns*. 2011;**83**(1):29-36. doi: [10.1016/j.pec.2010.04.010](https://doi.org/10.1016/j.pec.2010.04.010). [PubMed: [20447795](https://pubmed.ncbi.nlm.nih.gov/20447795/)].
7. Groupt WH. Study protocol for the World Health Organization project to develop a Quality of Life assessment instrument (WHOQOL). *Qual Life Res*. 1993;**2**(2):153-9. doi: [10.1007/bf00435734](https://doi.org/10.1007/bf00435734).
8. Cohen S, Janicki-Deverts D, Miller GE. Psychological stress and disease. *JAMA*. 2007;**298**(14):1685-7. doi: [10.1001/jama.298.14.1685](https://doi.org/10.1001/jama.298.14.1685). [PubMed: [17925521](https://pubmed.ncbi.nlm.nih.gov/17925521/)].
9. Sadock BJ, Sadock VA. Kaplan and Sadock's synopsis of psychiatry: Behavioral sciences/clinical psychiatry. Lippincott Williams & Wilkins; 2011.
10. Yousefy AR, Ghassemi GR, Sarrafzadegan N, Mallik S, Baghaei AM, Rabiei K. Psychometric properties of the WHOQOL-BREF in an Iranian adult sample. *Community Ment Health J*. 2010;**46**(2):139-47. doi: [10.1007/s10597-009-9282-8](https://doi.org/10.1007/s10597-009-9282-8). [PubMed: [20063062](https://pubmed.ncbi.nlm.nih.gov/20063062/)].
11. Rhee SH, Parker JC, Smarr KL, Petroski GF, Johnson JC, Hewett JE, et al. Stress management in rheumatoid arthritis: what is the underlying mechanism? *Arthritis Care Res*. 2000;**13**(6):435-42. [PubMed: [14635321](https://pubmed.ncbi.nlm.nih.gov/14635321/)].
12. Waheed A, Hameed K, Khan AM, Syed JA, Mirza AI. The burden of anxiety and depression among patients with chronic rheumatologic disorders at a tertiary care hospital clinic in Karachi, Pakistan. *J Pak Med Assoc*. 2006;**56**(5):243-7. [PubMed: [16767957](https://pubmed.ncbi.nlm.nih.gov/16767957/)].
13. Alishiri GH, Bayat N, Salimzadeh A, Salari A, Hosseini SM, Rahimzadeh S, et al. Health-related quality of life and disease activity in rheumatoid arthritis. *J Res Med Sci*. 2011;**16**(7):897-903. [PubMed: [22279457](https://pubmed.ncbi.nlm.nih.gov/22279457/)].
14. Bayat N, Alishiri GH, Salimzadeh A, Izadi M, Saleh DK, Lankarani MM, et al. Symptoms of anxiety and depression: A comparison among patients with different chronic conditions. *J Res Med Sci*. 2011;**16**(11):1441-7. [PubMed: [22973345](https://pubmed.ncbi.nlm.nih.gov/22973345/)].

15. Alishiri GH, Bayat N, Fathi Ashtiani A, Tavallaii SA, Assari S, Moharamzad Y. Logistic regression models for predicting physical and mental health-related quality of life in rheumatoid arthritis patients. *Mod Rheumatol*. 2008;**18**(6):601-8. doi: [10.1007/s10165-008-0092-6](https://doi.org/10.1007/s10165-008-0092-6). [PubMed: [18568385](https://pubmed.ncbi.nlm.nih.gov/18568385/)].
16. Ahmadi K, Shahidi S, Nejati V, Karami G, Masoomi M. Effects of Chronic Illness on the Quality of Life in Psychiatric out patients of the Iraq - Iran War. *Iran J Psychiatry*. 2013;**8**(1):7-13. [PubMed: [23682246](https://pubmed.ncbi.nlm.nih.gov/23682246/)].
17. Dehghani F, Neshat-Doust HT, Molavi H, Nilforoushzadeh MA. The Effect of Cognitive-Behavioral Stress Management Therapy on Depression and Anxiety of Females with Alopecia Areata. *J Clin Psychol*. 2009;**1**(2):0.
18. Anthony KK, Schanberg LE. Assessment and management of pain syndromes and arthritis pain in children and adolescents. *Rheum Dis Clin North Am*. 2007;**33**(3):625-60. doi: [10.1016/j.rdc.2007.07.010](https://doi.org/10.1016/j.rdc.2007.07.010). [PubMed: [17936179](https://pubmed.ncbi.nlm.nih.gov/17936179/)].
19. O'Donnell ML, Lau W, Tipping S, Holmes AC, Ellen S, Judson R, et al. Stepped early psychological intervention for posttraumatic stress disorder, other anxiety disorders, and depression following serious injury. *J Trauma Stress*. 2012;**25**(2):125-33. doi: [10.1002/jts.21677](https://doi.org/10.1002/jts.21677). [PubMed: [22522725](https://pubmed.ncbi.nlm.nih.gov/22522725/)].