

ORIGINAL ARTICLE

The Effect of Educational Program on Self-efficacy of Women with Rheumatoid Arthritis: A Randomized Controlled Clinical Trial

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ABSTRACT

Background: Rheumatoid Arthritis (RA) is a chronic and inflammatory disorder which is the major cause of disability in adults. Patient training is a vital aspect of nursing care for people with arthritis aiming to enable them to live as independently as possible. In the present study, we aimed to evaluate the effect of the educational program on self-efficacy on women with rheumatoid arthritis.

Methods: This study was an open randomized controlled clinical trial during May to July 2013. Women (64 participants) with confirmed RA and a mean±SD age of 48.6±9.83 years were enrolled; they were randomly assigned into intervention and control groups (32 in each group). The patients in the intervention group participated in a training programs consisting of two 30-minute sessions per week for 8 consecutive weeks. Data were collected by using Arthritis Self-Efficacy Scale (ASES) and demographic questionnaire. ASES questionnaire was filled in three times by the participants: before, immediately after, and three months after the intervention. Data were analyzed using SPSS software, version 20, and statistical tests including Chi-square and t-test.

Results: The results showed that the mean of self-efficacy scores of the intervention group, immediately and three months after the intervention, significantly enhanced in all dimensions compared with the control group ($P<0.001$, $P<0.001$).

Conclusion: It can be concluded that training programs is effective for improving self-efficacy in the patients suffering from RA by raising their awareness towards their disease and methods of adaptation with it. But as to the sustainability of the impact of educational courses on self-efficacy, it seems that more research is required.

Trial Registration Number: IRCT201308187531N3

KEYWORDS: Educational program, Rheumatoid arthritis, Self-efficacy

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INTRODUCTION

Rheumatoid Arthritis (RA) is a chronic, systemic chronic inflammatory autoimmune disorder of unknown origin which affects connective tissues and is outlined as the main common cause of morbidity due to inflammatory arthritis worldwide.¹ RA may occur at any period of life. Its prevalence and incidence increase with age.² The prevalence of rheumatoid arthritis is about 0.5-0.7% in adult population. Furthermore, this disease is more common in females than in males.^{3,4} RA, often happens in the fourth and fifth decades of life and can affect the activities of daily life.⁵ RA may cause numerous physical complications, among which chronic pain, fatigue, impaired mobility and limb deformities are the major ones.²

The RA complications are not limited to apparent restrictions in mobility and activities of daily living, but obscure systemic effects of such diseases can also lead to organ failure, death or serious health problems such as pain, fatigue, sleep disturbance and changes in self-image. Such conditions can cause disabilities and permanent changes in the patients. The chronic nature of rheumatic diseases necessitates obtaining the required knowledge about the disease to make sound decisions for managing the health condition and developing a treatment plan tailored to the patient's lifestyle. Fundamental objectives and strategies to deal with such diseases include suppressing inflammation and autoimmune response, controlling pain, maintaining or improving joint mobility and functional status as well as increasing the patients' awareness about the disease process.⁶ Encouraging patients to adopt correct and proper self-care behaviors is an important factor which contributes to successful management of the disease. Self-efficacy also seems extremely important in managing RA. Unpredictable courses of the disease and its varying activity can make the patients find their disease uncontrollable and this can decrease their self-efficacy in handling it.^{6,7}

Self-efficacy is a person's self-confidence

defined as one's belief in one's own ability to successfully organize and accomplish a particular task, behavior or any changes in cognitive status regardless of the underlying terms and conditions; it is also a prerequisite for behavior change which affects the amount of efforts and level of performance in reaching a goal. People with higher levels of self-efficacy hold a belief that they are able to control their life events effectively. Such a belief, which can affect their behaviors directly, creates a standpoint for them different from that of people with poor self-efficacy, its significant role in the initiation and maintenance of healthy behaviors, in the case of the occurrence of any chronic illnesses such as arthritis.⁸⁻¹¹

Previous studies have shown that using structured education can improve the self-efficacy in patients suffering from Chronic Obstructive Pulmonary Disease (COPD) as well.¹² It is also reported that increased self-efficacy could improve self-care skills and behaviors in patients with diabetes mellitus.¹³ Evidence shows that it is essential to enable the patients to take care of themselves using scheduled training programs, which are client-based, including patients' active participation in improving their quality of life. It is of extreme importance due to several reasons such as priority of prevention to treatment, the chronicity of the disease, shorter hospital stay and spending recovery period at home as well as the problems of access to health care.^{14,15} The results of a study showed that even a small increase in the self-care of chronic conditions can have major effects on reducing the demand for specialized services in the health care.¹⁶

Without training the patients and their participation in their self-care process, health care will be more costly and quality of life will be more impaired.¹⁷ Patient training is a vital aspect of nursing care for those with arthritis to enable them to live as independently as possible, take their medications correctly and safely and use assistive devices properly. Such training is focused on the type of disorder,

possible changes resulting from the disorder, prescribed treatment regimen, side effects of the medications and strategies to maintain the individuals' independence and performance as well as patient's safety at home.⁶

Several studies showed that training the patients can raise their knowledge and result in the improvement of self-management activities and health status so that they can prepare themselves for decision-making and compliance with the treatment regimen.¹⁸ It is worth mentioning that the aim of training the patients with chronic diseases is to sustain their behavior change for a longer period of time and even until the end of life. Due to the nature of the disease, immediate changes are not expected to be seen; for example, prompt resolution of disabilities and difficulties is not expected to occur in the case of chronic diseases such as arthritis. However, self-management training seems essential and profitable, so the patients should obtain the required knowledge and skills needed for decision-making and solving their own problems and those related to communicating with others.¹⁹

Therefore, in the present study we aimed to evaluate the effect of educational intervention on self-efficacy of women with rheumatoid arthritis.

MATERIALS AND METHODS

This study was an open randomized controlled clinical trial which was approved by the Ethics Committee of Shiraz University of Medical Sciences (CT-92-6620). Among 900 patients with rheumatoid arthritis, referring to the rheumatology clinic of Hafez hospital, Shiraz, southwest Iran, 64 women with confirmed RA from May to July 2013 were enrolled. The sample size was calculated based on the data of similar study¹⁸ (32 in each group) using Power SSC statistical software and the following formula (power: 80%, α : 0.05, loss rate: 20%)

$$n = \frac{2 \sigma \left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta} \right)^2}{(\mu_1 - \mu_2)}$$

Patients were selected (in accordance with the inclusion criteria) using a simple random sampling method and divided into two intervention and control groups. The Quadri balanced block randomization method (using a table of random numbers) was used to randomize the participants into the intervention and control groups (two groups of 32 each). According to the sample size (64), 16 blocks were needed. Then, the blocks were randomly written on paper and the researcher referred to the list of the patient and placed them in the blocks (Figure 1).

The inclusion criteria included a confirmed diagnosis of RA by a rheumatologist based on the 2010 American College of Rheumatology criteria, age of 18 or more, willingness to participate in the study, ability to understand and communicate in Persian language, lack of osteoarthritis or any other inflammatory articular diseases, and lack of comorbid conditions such as cardiac and pulmonary diseases as well as psychological disorders; the exclusion criteria included any changes in the trend of articular therapy and medications during the study or the last 6 months, need to change the treatment, undergoing joint surgery during the study or 6 months before the intervention, participation in a similar training programs and absence in more than two sessions of the training program. Then, written informed consent was obtained from all the participants.

Data were collected by interviewing the participants using Arthritis Self-Efficacy Scale (ASES) and demographic questionnaire which enquired about age, age at the onset of the disease, duration of the disease, educational level, occupation, and marital status. The questionnaire was filled out by both the intervention and control groups prior to the intervention.

The ASES is a standardized, self-report and reliable instrument developed to measure self-efficacy in patients with arthritis. It was initially designed by Lorig et al. (1989).²⁰ The ASES has three subscales and 20 items including self-efficacy for physical function

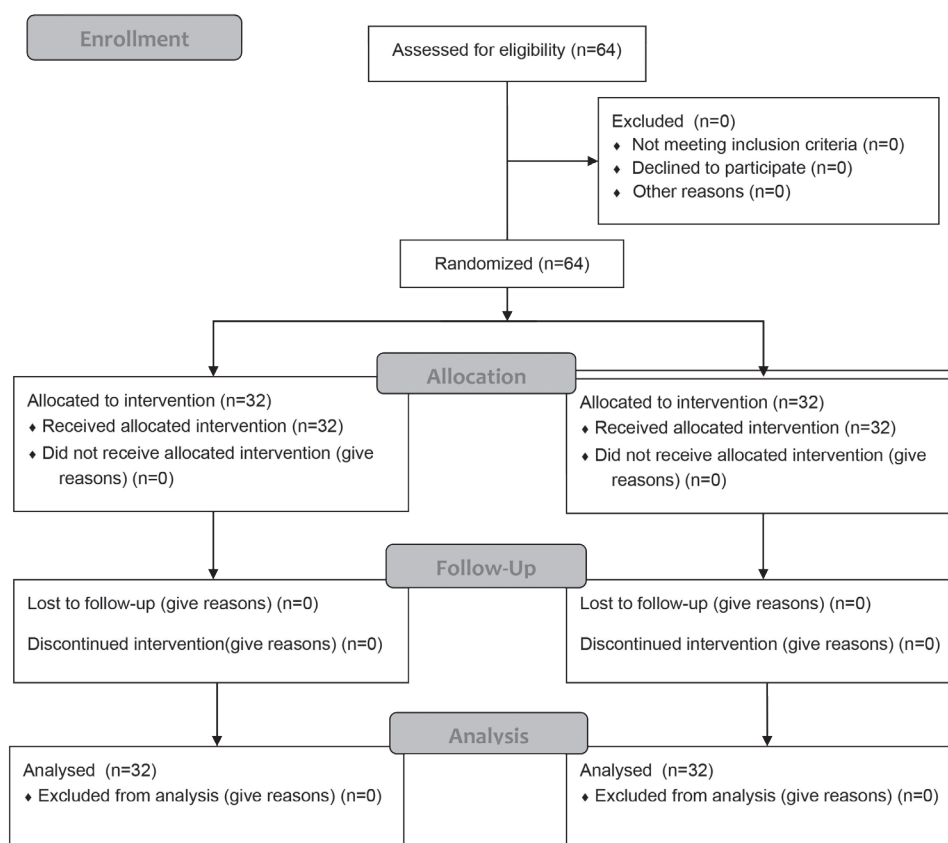


Figure 1: CONSORT flowchart

(9 items), self-efficacy for managing pain (5 items), and self-efficacy for controlling other symptoms such as fatigue and depression (6 items). Items are rated on a 10-point rating scale. The responses range from 1 (very uncertain) to 10 (very certain) with lower scores indicating lower self-efficacy level.

Due to the large number of items in the questionnaire which were burdensome for the participants, we omitted 9 physical functioning items, as done by Brekke et al. (2001) and Morowati Sharifabad et al. (2009).^{21,22} In our study, self-efficacy was measured on only 2 subscales of pain and other symptoms. Hence, our responses ranged from 0 (not at all) to 3 (very much) and the obtainable score ranged from 0 to 33.

Validity and reliability of the questionnaire in Iran have been assessed by Morowati Sharifabad et al. in 2009. Face and content validity was approved by a panel of experts. To ensure internal consistency, a pilot study was conducted on 45 patients suffering from RA and Cronbach's alpha coefficient was

0.65. Furthermore, by administering a parallel interview to 20 patients with RA, reliability of the questionnaire was tested ($r=0.93$).²² The questionnaire was filled out three times by the participants with help the researcher through structured interviews: before, immediately after and three months after the intervention.

The patients in the intervention group participated in a group education program for 8 consecutive weeks (two 30-minute sessions per week). Training was conducted by the researcher at a clinic. The program included trainings on RA, planning and scheduling daily activities, scheduling time for rest and sleep, diet, strategies for coping with pain and joint protection, and promotion of their knowledge about methods of taking medications and the side effects of the medicines (Table 1). Moreover, the patients received a guideline booklet at the end of the intervention. The control group continued their standard treatment without receiving any training course. Immediately and 3 months after the intervention, the ASES questionnaire was completed again by the

Table 1: Training Progress Table

Session	Time	Topic
1	30 min	Introduction to the training program, Familiar participants together and with program
2,3	30 min	What is Rheumatoid Arthritis? (Definition – Causes- ...)
4,5	30 min	Strategies for coping with pain
6,7	30 min	Strategies for joint protection
8,9	30 min	Planning and scheduling daily activities
10,11	30 min	Drugs and diet
12,13	30 min	Drug side effects and how to control them.
14	30 min	scheduling time for rest and sleep
15	30 min	Respond to patient questions
16	30 min	Educational program evaluation and get feedback

participants of both intervention and control groups. Finally, a training session was held for the patients in the control group and they received the same booklet.

The collected data were analyzed using SPSS software, version 20. Statistical tests including Chi-square test, independent and paired tests were used as appropriate. The significance level was set at <0.05. Considering that the aim of measuring self-efficacy in patients 3 months after the intervention was to evaluate the persistence of the effects of training course, we used t-test.

The normality of the quantitative variables was checked using the Shapiro-wilk’s test and Kolmogorov-Smirnov test. The distribution of all variables was normal ($P>0.05$).

RESULTS

The mean±SD of the age of patients was 48.6±9.83 with a range of 23-63 years.

According to independent t-test, there was no significant difference between the two groups with respect to their mean age ($P=0.74$) and mean age of the occurrence of the disease

Table 2: Comparison of the frequency distribution of the participants’ demographic variables in the intervention and control groups

Demographic Variable	Group	Intervention group	Control group	P value
		(N=32)	(N=32)	
		Mean±SD	Mean±SD	
Age (year)		48.06±10.51	48.87±9.24	0.74*
Age of Occurrence (year)		39.00±10.23	40.28±7.80	0.57*
		N (%)	N (%)	
Marital Status	Single	5 (15.6)	4 (12.5)	1**
	Married	27 (84.4)	28 (87.5)	
Educational Level	Illiterate	3 (9.4)	7 (21.9)	0.33**
	Primary Education	13 (40.6)	9 (28.1)	
	Diploma	13 (40.6)	15 (46.9)	
	Higher education	3 (9.4)	1 (3.1)	
Occupational Status	Housewife	23 (71.9)	25 (78.1)	0.63**
	Clerk	4 (12.5)	4 (12.5)	
	Retired	4 (12.5)	1 (3.1)	
	Self-employed	1 (3.1)	2 (6.3)	
Duration of the Disease	Less than One Year	3 (9.4)	0 (0)	0.20**
	1-5 Years	10 (31.3)	10 (31.3)	
	More than 5 Years	19 (59.4)	22 (68.8)	

*Independent t-test; **Chi-square test

(P=0.57). Chi-square test showed no significant difference between the two groups in terms of marital, educational and occupational status as well as the duration of the disease. Therefore, the two groups were matched on all demographic variables (Table 2).

As shown in Table 3, there was no significant difference between the intervention and control groups in terms of pain (P=0.92), other symptoms (P=0.78) and total self-efficacy (P=0.82) before the intervention. However, a significant difference in the mean scores was observed between the groups for all dimensions immediately after and 3 months after the intervention (P<0.001). Figure 2 shows a significant difference between the

two groups before and after the intervention in terms of self-efficacy score (P<0.001).

As shown in Table 4, the mean scores of all dimensions of self-efficacy decreased in the intervention group after the third month of follow-up, indicating the short length of the training program. Such a decrease was significant in terms of pain (P=0.027), other symptoms (P<0.001) and total self-efficacy (P<0.001). However, in the control group, the mean scores increased in the dimension of pain (P=0.745) and total self-efficacy (P=0.786), but they remained unchanged in the dimension of other symptoms (P=1.00). According to the results of t-test, such changes were not statistically significant.

Table 3: Comparison of the mean score of self-efficacy before, immediately and 3 months after the intervention in the intervention and control groups

Group/ Time Variable	intervention Group Mean±SD			Control Group Mean±SD			P Value*		
	Before the Interven- tion	Immedi- ately after the Inter- vention	3 Months after the Interven- tion	Before the Interven- tion	Immedi- ately after the Interven- tion	3 Months after the Interven- tion	Before the In- terven- tion	Imme- diately after the Inter- vention	3 Months after the Inter- vention
Pain Self- Efficacy	6.31±2.79	9.18±2.48	8.90±2.40	6.25±2.77	5.84±2.66	5.87±2.74	0.92	<0.001	0.000
Other Symp- toms Self- Efficacy	8.78±4.36	12±3.3	11.31±3.08	8.50±3.60	8.50±3.69	8.50±3.57	0.78	<0.001	0.001
Total Self- Efficacy	15.9±6.65	21.18±5.10	21.21±5.04	14.75±6.00	14.34±5.98	14.37±5.95	0.82	<0.001	0.000

*Independent t-test

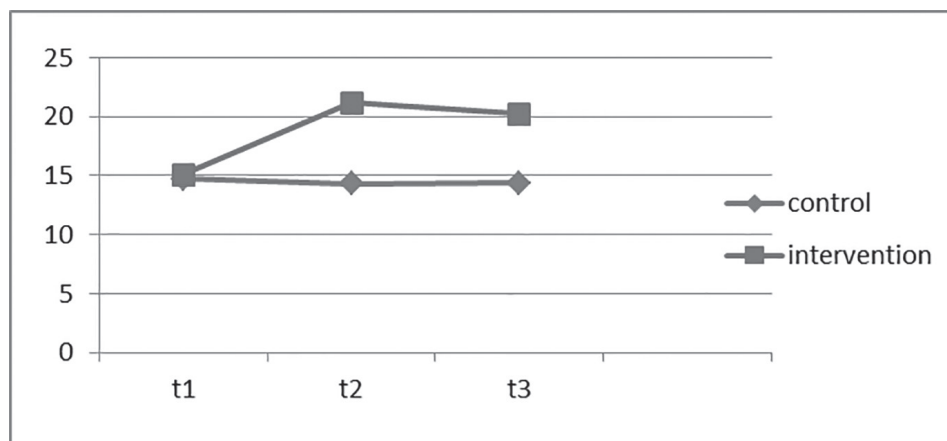


Figure 2: Comparison of the mean difference of self-efficacy scores before and immediately and 3 months after the intervention in the intervention and control groups

Table 4: Comparison of the mean (\pm SD) difference of self-efficacy score before and after the intervention in the intervention and control groups

Variable	intervention Group Mean Difference \pm SD		control Group Mean Difference \pm SD	
	Before and immediately after the intervention	Immediately after and 3 months after the intervention	Before and immediately after the intervention	Immediately after and 3 months after the intervention
Pain Self-Efficacy	2.87 \pm 1.38	-0.28 \pm 0.63	0.40 \pm 1.18	0.03 \pm 0.53
P value*	<0.001	0.027	0.062	0.745
Other Symptoms Self-Efficacy	3.21 \pm 2.22	-0.68 \pm 0.78	0.00 \pm 1.13	0.00 \pm 0.35
P value*	<0.001	0.000	1.00	1.00
Total Self-Efficacy	6.09 \pm 2.73	-0.96 \pm 0.89	-0.40 \pm 1.73	0.03 \pm 0.64
P value*	<0.001	0.000	0.196	0.786

*Paired t-test

DISCUSSION

The results of paired t-test showed that the mean scores of self-efficacy significantly enhanced in all dimensions in the intervention group immediately after the intervention ($P < 0.001$), indicating the effect of the training program on the self-efficacy of the patients with RA in this group. Moreover, in the control group the mean scores decreased in the dimensions of pain and total self-efficacy but remained unchanged in the dimension of other symptoms. A similar study showed self-efficacy in all dimensions significantly increased in self-management arthritis intervention in patients with osteoarthritic knee.²³ Also, in another study the researchers found improvements in the patients with early RA after an 8-week self-management therapeutic-training program.²⁴ Previous studies have confirmed that holding particular training courses could enhance the self-efficacy and, subsequently, self-care in the patients with chronic diseases.^{12,13} Previous studies have reported the significant effect of education and subgroups of regular exercise, choosing healthy diet and controlling complications of the disease on the mean of total self-efficacy scores in the patients with diabetes mellitus.²⁵ Another study in England confirmed the positive and significant effects of interventions on patients' self-efficacy for managing pain and other symptoms after a 4-month follow-up. Increases were also reported in the efficacy of healthy behaviors (such as symptom management, eating habits as well as exercise and rest) in the participants of the

case group.²⁶

Also, the results of the present study revealed that education could significantly affect the perceived self-efficacy in the patients with arthritis regarding their ability to exert control over pain; however, it was not significant regarding shin-related exercises. In a previous study, the researchers justified the lack of educational effects on exercise-related self-efficacy by explaining that training in a limited period of time cannot enhance the patients' confidence in taking such an action due to the severe complications such as joint stiffness, pain and inflammation they experience.²⁷ On the other hand, the length of training programs in previous studies has been more than 8 weeks and 2 sessions per week. A similar study in Netherland was carried out on the patients with cardiovascular diseases in which nursing interventions were based on the patients' participation in their treatment process and learning self-management. In the mentioned study, the total self-efficacy scores did not change after 6 weeks; however, nursing interventions significantly improved the self-efficacy in doing regular exercise and choosing healthy food.²⁸ Moreover, another study showed that self-efficacy improved in the patients with RA due to positive effects of an 8-week group-based exercise and educational program; however, such improvement was not statistically significant, indicating the insufficiency of the contents presented in the program.²⁹

Decreased educational stability in the improvement of patients' self-efficacy at the

third month of follow-up reflects the fact that the training materials should be repeated frequently during the training sessions so that both acquired skills and the learnt materials become more stable and durable. Considering the mean age of the participants (>40 years), confounding factor such as fatigue caused by illness as well as other physical and psychological problems could negatively affect the stability of trainings. Another limitation of this study was lack of male participants in the study because the disease is more common among females than males.

CONCLUSION

It can be concluded that training programs is an effective strategy for improving self-efficacy in the patients suffering from chronic diseases such as RA by raising their awareness towards their disease and methods of adaptation with it. Also, these results can highlight the role of nurses in the tertiary prevention of chronic diseases and prevention of disability and complications of these diseases. Moreover, such improvement is an important prerequisite for behavior change which is associated with controlling the treatment. However, as to the sustainability of the impact of education classes on self-efficacy, it seems that more research is needed.

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Conflict of Interest: None declared.

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