

## Original Research Article

# Effectiveness of supportive educational intervention on knowledge, self-care behavior, disease activity and health status among arthritis patients

Nema Ram Gurjar<sup>1\*</sup>, K. Thresiamma Thomas<sup>1</sup>, Mukesh Tiwari<sup>2</sup>

<sup>1</sup>Department of Nursing, Nims Nursing College, NIMS University, Jaipur, Rajasthan, India

<sup>2</sup>Department of Orthopaedics, Medical College and Hospital, NIMS University, Jaipur, Rajasthan, India

**Received:** 07 June 2018

**Revised:** 30 July 2018

**Accepted:** 31 July 2018

### \*Correspondence:

Mr. Nema Ram Gurjar,

E-mail: gurjarnemaram@yahoo.com

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** Arthritis is the group of conditions affecting the joints and typically causes swelling, pain and stiffness. Osteoarthritis & rheumatoid arthritis are the most common type of arthritis. Patient education should lead not only to changes in knowledge, but also to changes in behavior and in health status. Objective of the study was to assess effectiveness of supportive educational intervention on knowledge, self-care behaviour, disease activity and health status among arthritis patients.

**Methods:** Pre-experimental, one group pre-test post-test research design ( $O_1 \times O_2$ ) was used. Total 20 patients of osteoarthritis and rheumatoid arthritis were selected for the study by purposive sampling technique.

**Results:** There was very high statistical significant difference in the mean pre-test and post test score of knowledge, self-care behavior, disease activity and health status among arthritis patients at p value was 0.001 level of significance. The study found significant fair correlation between knowledge gain score and self-care behaviour gain score, self-care behaviour gain score and reduction of disease activity and self-care behaviour gain score and health status at p value was 0.01 level of significance.

**Conclusions:** Study concludes that supportive educational intervention is effective to enhance knowledge, self-care behaviour & health status among arthritis patients.

**Keywords:** Effectiveness, Supportive educational intervention, Knowledge, Self-care behaviour, Disease activity, Health status and arthritis patients

## INTRODUCTION

Arthritis is the most common cause of deformity, places enormous burden on the individual, society, nation and to the world. It is the highly prevalent and continues on rise. Arthritis places several limitations on person's life in the form of impairment in daily activities, work productivity and quality of life. Arthritis affects one or multiple joints characterized by inflammation, pain and stiffness. Arthritis includes more than 100 conditions including the

two most common types -osteoarthritis and rheumatoid arthritis.<sup>1</sup> Osteoarthritis is the degenerative joint disease, mostly associated with aging and affects weight bearing joints such as joints of hands, knees and hips.<sup>2,3</sup> Rheumatoid arthritis is the chronic systematic inflammatory disease of the joints. It is autoimmune in nature, more serious debilitating disease with incidence of around 1% worldwide.<sup>4</sup> Rheumatoid arthritis (RA) affects about 0.92% of adult population in India. Osteoarthritis (OA) affects about 4-6% of adult

population in India. Both type of Arthritis OA and RA are three times more in women than men.<sup>5,6</sup>

Even though, there is no cure for arthritis, the disease can be controlled and managed well with patients' consciousness about the treatment or taking active part in the management. The scarcity of knowledge on arthritis and its management increases ignorance toward the disease resulting in lack of self-care behavior to manage the disease. People are not taking active participation to control and manage arthritis due to lack of knowledge related to seriousness of disease and importance of self-care behaviour. The patients have to understand that their role is very important in managing the disease. The patients have to learn to adapt with disease with the wide range of behaviour like adherence to medication regimens, exercise, proper posture, yoga rest, diet, weight control, hot application to painful joints, listening music, deep breathing and relaxation exercises, and proper sleep. Patients have to understand that this disease can make life complicated in all aspect if not managed timely and properly.<sup>7</sup> Hence, empowering of arthritis patients toward self-care in the management of the disease is important. Patient education can improve the lives of patients with rheumatic diseases. Patients need a formal body of knowledge and self-care behaviour in order to manage the disease on a day-to-day basis. Patient education should lead not only to changes in knowledge, but also to changes in behavior and in health status. It is presumed that changes in behavior lead to changes in health status. Several studies have indeed shown patient education to be effective in changing behavior and changing health status.<sup>8</sup>

In various reviews of arthritis patient education programs, it has been concluded that educational interventions can be effective in changing knowledge, behaviors, and physical and psychosocial health status. Lineker et al reported statistically significant increase in KQ scores in the treatment group compared to the control group ( $p=0.01$ ), with an effect size of 0.48 after 6-week community-based physiotherapy intervention, with a strong educational component in rheumatoid arthritis patients.<sup>9</sup> A randomized controlled study showed that arthritis self-management programme is effective in promoting improvements in perception of control, health behaviours and health status, when delivered in UK settings.<sup>10</sup>

Educational programmes increase abilities of arthritis patients and reduce pain and functional limitations. Vermaak et al. found significant improvements in fatigue, depression and SF-36 mental health immediately following intervention, with long term benefits for depression and emotional and physical function in rheumatoid arthritis after participants completed a 6-week program.<sup>11</sup> Even though many studies claim for importance of education to arthritis patient it has been observed that most of practitioners are neither giving emphasis to patients teaching nor providing educational

material. Nursing personnel can have significant role in teaching the arthritis patients and providing necessary educational material. They must understand the importance of self-care behaviors and also, the outcomes of it. They should always guide and motivate them in performing these behaviors. In this view the present study aimed to evaluate the effectiveness of supportive educational intervention on knowledge, self-care behaviour, disease activity and health status among arthritis patients.

## **METHODS**

### ***Study design population, sampling technique and sample size***

Pre-experimental, one group pre-test post-test research design ( $O_1 \times O_2$ ) was adopted for the study. The study was carried out among arthritis patients diagnosed with rheumatoid arthritis and osteoarthritis by a rheumatologist or MD, Orthopedician based on the criteria of the American College of Rheumatology (ACR), visiting out patient department, NIMS hospital, Jaipur from July 1, 2017 to October 25, 2017. Convenience sampling technique was used for the study. Total 20 arthritis patients diagnosed with rheumatoid arthritis and osteoarthritis were taken for the study.

### ***Criteria of sample selection***

#### ***Inclusion criteria***

Inclusion criteria were patients diagnosed with rheumatoid arthritis and osteoarthritis diagnosed by MD, Orthopedician or a rheumatologist based on the criteria of the American College of Rheumatology (ACR); patients who were willing to participate in the study; patients who can read Hindi or English.

#### ***Exclusion criteria***

Exclusion criteria were patients who already attended any similar teaching programme on arthritis and its management; patient who were having severe arthritis or complicated arthritis where patients are having severe joint deformity or disabled joint and unable to take self-care; patient undergone joint replacement surgery like knee replacement surgery, hip replacement surgery etc.; patient with history of other chronic diseases including cardiovascular diseases, asthma, cancer, psychological disorders (depression), consumption of mood stabilizers, not having ability of speaking and any audio-visual problems.

### ***Data collection procedure***

After obtaining informed consent from the patients for inclusion in the study, the pretest was conducted in the OPD of Orthopedics. The study participants were assessed for the socio demographic variables, knowledge

on arthritis and self-care behaviour practicing in arthritis. After that, the study participants were distributed remaining two tools to assess disease activity and health status and then asked to read and fill at home and return them back at the time of supportive educational programme and collected before administering supportive educational intervention.

Supportive educational intervention was administered for 2 hours and 30 minutes includes lecture cum demonstration followed by distributing written educational material on arthritis i.e. Arthritis Handbook on Self-care in Arthritis to all arthritis participant. The supportive educational intervention was re-administered 3 times at 2 weeks interval for the duration of 1 hour each. Follow up telephone calls were made by researcher after supportive educational intervention to motivate or enhance reading Arthritis Handbook on Self-care in Arthritis and adhere to self-care behavior in routine daily practice.

The post test was conducted using the same data collection tools after 3 months of administering first supportive educational intervention.

#### **Ethical approval**

Approval from ethics committee of NIMS University, Rajasthan, Jaipur was obtained. Permission was obtained from the concerned authority of the NIMS hospital and Khandakha hospital, Jaipur to conduct study. A written consent was obtained from the respondents participating in the study.

#### **Hypothesis**

Level of significance at 0.05 level. H<sub>1</sub> There will be significant difference in the knowledge score after the supportive educational intervention among arthritis patients at 0.05 level. H<sub>2</sub> There will be significant difference in the level of self-care behaviour after the supportive educational intervention among arthritis patients. H<sub>3</sub> There will be significant difference in the disease activity after the supportive educational intervention among arthritis patients. H<sub>4</sub> There will be significant difference in the health status after the supportive educational intervention among arthritis patients. H<sub>5</sub> There will be significant association between knowledge and self-care behaviour among patients with arthritis. H<sub>6</sub> There will be significant association between self-care behaviour and disease activity among patients with arthritis. H<sub>7</sub> There will be significant association between self-care behaviour and health status among patients with arthritis.

#### **Statistical analysis**

Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS, version 16), STATA (version 10) and Epi info (Version 3.5.1) statistical

software's. The difference between mean pretest and posttest was calculated using student paired t-test. Correlation between knowledge, self-care behaviour, disease activity and health status gain/reduction score was calculated using Karl Pearson correlation coefficient.

#### **RESULTS**

Data was analyzed using descriptive and inferential statistics.

Table 1 shows that majority of patients 7 (35%) were from the age groups 60-70 years (25% each) followed by 5 (25%) from the age group 31-40 and 41-50 years respectively. Majority of patients 13 (65%) were women whereas men were only 7 (35%). Maximum number of patient 8 (40%) had middle level education, followed by 6 (30%) of respondents had primary level education. Most of patients 18 (90%) were married. The majority 13 (65%) of patients were from nuclear family. Most of patients 12 (60%) were from the income group of Rs. 10001 to 20000/- and followed by 8 (40%) were from the income of less than Rs10000/-. Most of patients 13 (65%) were from rural area, followed by 5 (25%) from semi urban and very least were from urban. Most of patients 11 (55%) were unskilled whereas 9 (45%) were skilled. The majority of respondents 16 (80%) had normal body weight whereas only few 4 (20%) were obese. Most of patients 15 (75%) were vegetarian and very few 5 (25%) were non vegetarian. 17 (85%) of patient had no any risk behavior whereas only few 2 (10%) had risk behaviour of both smoking as well as drinking alcohol and very least 1 (5%) had only habit of smoking. More than half 11 (55%) of patients had arthritis from last 1-2 years followed by 5 (25%) of patients had arthritis from less than 1 year and only few 4 (20%) of respondents had arthritis from last 2 to 5 years.

Table 2 shows that there is a significant difference between pretest and posttest score at (p=0.01) level of significance. In pretest, 100% of the patients had inadequate level of knowledge score whereas in posttest none of the patients had inadequate level of knowledge score, 30% of patients had moderate level of knowledge score and 70% had good level of knowledge score. Considering self-care behavior in pretest, 100% of the patients had poor level of self-care behaviour score whereas in posttest none of the patients had poor level of self-care behaviour score, 35% had moderate level self-care behaviour and 65% had good self-care behaviour. In pretest, 35% of the patients had mild disease activity, 65% of the patients had moderate disease activity whereas in posttest, 65% of the patients had mild disease activity and 35% of the patients had moderate disease activity. In pretest, 20% of the patients had good health status, 30% of the patients had moderate health status and 50% of the patients had poor health status whereas in posttest 35% of the patients had good health status, 45% of the patients had moderate health status and 20% of the patients had poor health status.

**Table 1: Frequency and percentage distribution of demographic variables.**

Demographic variables	No. of patients	%	
<b>Age (in years)</b>	18 -30	0	0
	31-40	3	15
	41-50	5	25
	51-60	5	25
	61-70	7	35
<b>Sex</b>	Male	7	35
	Female	13	65
<b>Education</b>	Primary	6	30
	Middle	8	40
	Secondary	5	25
	Higher secondary	0	0
	Graduate and above	1	5
<b>Marital status</b>	Married	18	90
	Single	2	10
	Divorced	0	0
	Widow	0	0
<b>Type of family</b>	Single	13	65
	Joint	7	35
	Extended	0	0
<b>Family income</b>	Less than Rs.10000	8	40
	Rs.10001 - 20000	12	60
	Rs.20001 -30000	0	0
	Rs.30001-40000	0	0
	>Rs.40000	0	0
<b>Area of residence</b>	Rural	13	65
	Semi urban	5	25
	Urban	2	10
<b>Work status</b>	Skilled	9	45
	Unskilled	11	55
	Disabled	0	0
	Retired	0	0
<b>Body Weight</b>	Under weight	0	0
	Normal	16	80
	Obese	4	20
<b>Diet habit</b>	Vegetarian	15	75
	Non Vegetarian	5	25
<b>Risk behaviours</b>	Nil	17	85
	Smoking	1	5
	Alcoholic+smoking	2	10
<b>Type of arthritis diagnosed</b>	Osteo-arthritis	10	50
	Rheumatoid arthritis	10	50
<b>Duration of arthritis (in years)</b>	Less than 1	5	25
	1 to 2	11	55
	2 to 5	4	20
	5 to 10	0	0

Table 3 shows that there was very high statistical significant difference in the mean pretest and post test score of knowledge, self-care behaviour, disease activity and health status among arthritis patients at p value is 0.001 level of significance.

Table 4 shows that, there were 43.13% improvement in knowledge score, 42.58% increase in self-care behaviour score, 13.28% decrease in disease activity score and 19.23% improvement in health status of the arthritis patients after supportive educational intervention.

**Table 2: Pre test and post test assessment of level of knowledge, self care behaviour, disease activity and health status among arthritis patients (n=20).**

	Level	No. of patients %				Extended McNemar's test
		Pretest		Posttest		
		N	%	N	%	
<b>Knowledge</b>	Inadequate	20	100	0	0	$\chi^2=55.4$ P=0.001***(S)
	Moderate	0	0	6	30	
	Adequate	0	0	14	70	
<b>Self-care behaviour</b>	Poor	20	100	7	35	$\chi^2=56.5$ P=0.001***(S)
	Moderate	0	0	13	65	
	Good	0	0	0	0	
<b>Disease activity</b>	No	0	0	0	0	$\chi^2=6.1$ P=0.01***(S)
	Mild	7	35	13	65	
	Moderate	13	65	7	35	
	Severe	0	0	0	0	
<b>Health status</b>	Good	4	20	7	35	$\chi^2=14.4$ P=0.01***(S)
	Moderate	6	30	9	45	
	Poor	10	50	4	20	

**Table 3: Comparison of pretest and posttest mean knowledge, self care behaviour, disease activity and health status among arthritis patients (n=20).**

Mean score on	Pretest		Posttest		Mean difference	Wilcoxon Rank sum test
	Mean	SD	Mean	SD		
<b>Knowledge</b>	12.80	3.24	30.05	4.16	17.25	Z=3.92 p=0.001***(S)
<b>Self behaviour</b>	17.50	3.97	43.05	6.55	25.55	Z=3.90 p=0.001***(S)
<b>Disease activity index</b>	41.00	9.27	31.70	6.39	9.30	Z=3.77 p=0.001***(S)
<b>Health status</b>	55.15	22.82	35.15	18.97	20.00	Z=3.83 p=0.001***(S)

**Table 4: Effectiveness of supportive educational intervention (n=20).**

Mean score on	Maximum score	Pretest		Posttest		% of benefit
		Mean	SD (%)	Mean	SD (%)	
<b>Knowledge</b>	40	12.80	32.00	30.05	75.13	↑43.13
<b>Self care behaviour</b>	60	17.50	29.17	43.05	71.75	↑42.58
<b>Disease activity index</b>	70	41.00	58.57	31.70	45.29	↓13.28
<b>Health status</b>	104	55.15	53.03	35.15	33.80	↓19.23

**Table 5: Correlation between knowledge gain score and self care behaviour score among arthritis patients (n=20).**

Correlation between	Pre test	Post test	Gain score	Spearman correlation coefficient
	Mean±SD	Mean ±SD	Mean±SD	
<b>Knowledge score</b>	12.80±3.24	30.05±4.16	17.25±4.75	$\rho=0.32$ P=0.01**
<b>Vs</b>	Vs	Vs	Vs	
<b>Self care behavior score</b>	17.50±3.97	43.05±6.55	25.55±6.51	

**Table 6: Correlation between self care behaviour gain score and disease activity among arthritis patients (n=20).**

Correlation between	Pre test	Post test	Gain score	Spearman correlation coefficient
	Mean±SD	Mean±SD	Mean±SD	
<b>Self care behavior score</b>	17.50±3.97	43.05±6.55	25.55±6.50	$\rho=-0.35$ P=0.01**
<b>Vs</b>	Vs	Vs	Vs	
<b>Disease activity index</b>	41.00±9.27	31.70±6.39	9.30±5.98	

**Table 7: Correlation between self care behaviour gain score and health status among arthritis patients (n=20).**

Correlation between	Pre test	Post test	Gain score	Spearman Correlation coefficient
	Mean±SD	Mean±SD	Mean±SD	
<b>Self care behavior score</b>	17.50±3.97	43.05±6.55	25.55±6.50	ρ=-0.39 P=0.01**
<b>Vs</b>	Vs	Vs	Vs	
<b>Health status score</b>	55.15±22.82	35.15±18.97	20.00±11.75	

Table 5 shows significant fair correlation between knowledge gain score and score and self-care behavior score at p=0.01 level of significance. It means knowledge score increases, their self-care behavior score increases fairly.

Table 6 shows significant fair correlation between self-care behavior gain score and disease activity reduction score at p=0.01 level of significance. It means self-care behavior score increases, their disease activity score decreases fairly

Table 7 shows significant fair correlation between self behavior gain score and health status score p value is 0.01 level of significance. It means self-behavior score increases, their arthritis impact score decreases fairly which means health status increases fairly.

## DISCUSSION

Many previous studies have shown that educational programme for arthritis patients increase knowledge, self-care behaviour and health status. The finding of this study clearly shows that supportive educational intervention is effective to increase knowledge, self-care behaviour and health status and reducing the disease activity in arthritis patients. Patient education programs have consistently been shown to increase patients' knowledge.<sup>12</sup> Kaur et al found that knowledge regarding self-care management of osteoarthritis among geriatric population was higher in experimental group after STP than control group.<sup>13</sup>

Study found association in knowledge and self-care behaviour that increase in knowledge enhances self-care behaviour in arthritis patients. Haidar Nadrian, found in his study that higher level of knowledge, attitude, self-efficacy, enabling factors and social support is associated with better self-care behavior.<sup>14</sup> Study also found significant correlation between self-care behaviour and disease activity as well as self-care behaviour and health status in arthritis patients. Callahan and Pincus found in his study that self-care behaviors improve health status and health outcomes.<sup>15</sup> Vermaak et al found significant improvements in depression and mental health in rheumatoid arthritis patients after self-management education program which were maintained to 12 months follow up.<sup>11</sup>

## CONCLUSION

This study was limited by patients of only two most common types of arthritis that is osteoarthritis and

rheumatoid arthritis with only 3 months intervention at selected hospitals settings. The study found that supportive educational intervention is effective in increasing knowledge and self-care behaviour, reducing disease activity and improving health status of arthritis patients. The result of study also found that knowledge regarding arthritis increase self-care behaviour which resulting in reduction of disease activity and improvement in health status of arthritis patients. With this study finding it is concluded that supportive educational intervention is having significant role in helping patients with this disabling condition.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

## REFERENCES

1. Arthritis Queensland. Arthritis and emotional wellbeing. Available at: [https://www.arthritis.org.au/arthritis/.../Arthritis-Emotional-Wellbeing\\_final\\_2017.pdf](https://www.arthritis.org.au/arthritis/.../Arthritis-Emotional-Wellbeing_final_2017.pdf). Accessed 20 May 2018.
2. Comprehensive Pain Specialists. Introduction to osteoarthritis. Available: <https://www.cpspain.com/introduction-to-osteoarthritis>. Accessed 05 November 2015.
3. Wilma PJ. Medical Surgical Nursing: Health and illness Perspectives. 7th ed. United States of America: Mosby Publishing; 2003: 1507.
4. Web MD. An introduction to what arthritis about. Available: <https://www.webmd.com/osteoarthritis/guide/arthritis-basics>. Accessed 01 November 2018.
5. Rheumatoid Arthritis Facts and Statistics. Available: <https://www.rheumatoidarthritis.org/ra/facts-and-statistics/>. Accessed 12 November 2015.
6. Arthritis-India. Fight arthritis with knowledge and courage. Available: [www.arthritis-india.com](http://www.arthritis-india.com). Accessed 12 November 2015.
7. Minnock P, Fitzgerald O, Bresnihan B. Quality of life, social support and Knowledge of disease in Women with Rheumatoid Arthritis. *Arthrit Rheuma*. 2003;47:221-7.
8. Brady TJ, Kruger J, Helmick CG, Callahan LF, Boutaugh ML. Intervention Programs for Arthritis and Other Rheumatic Diseases. *Health Edu Behav*. 2003;30:44-63.
9. Lineker SC, Badley EM, Hughes EA, Bell MJ. Development of an instrument to measure knowledge in individuals with rheumatoid arthritis:

- the ACREU rheumatoid arthritis knowledge questionnaire. *J Rheumatol*. 1997;24(4):647-53.
10. Barlow JH, Turner AP, Wright CC. A Randomised Controlled Study of the Arthritis Self-Management Programme in the UK. *Health Education Research*. 2001;15(6):665-80.
  11. Vermaak V, Briffa NK, Langlands B, Inderjeeth C, McQuade J. Evaluation of a disease specific rheumatoid arthritis self-management education program, a single group repeated measures study. *BMC Musculoskelet Disord*.. 2015;16:214.
  12. Daltroy LH, Liang MH. Arthritis education: opportunities and state of the art. *Health Educ Q*. 1993;20:3-16.
  13. Kaur WG, Sharma P, Kaur M. A Study to assess the effect of Structured Teaching Programme on Knowledge Regarding Self-care Management of Osteoarthritis among Geriatric Population. *Int J Nurs Edu*. 2015;7(3):168-72.
  14. Nadrian H, Morowatisharifabad MA, Bahmanpour K. Development of a Rheumatoid Arthritis Education Program using the PRECEDE\_PROCEED Model. *Health Promotion Perspectives*. 2011;1(2):118-29.
  15. Callahan LF, Pincus T. Education, self-care, and outcomes of rheumatic diseases: further challenges to the “biomedical model” paradigm. *Arthritis Care Res*. 1997;10:283–8.

**Cite this article as:** Gurjar NR, Thomas KT, Tiwari M. Effectiveness of supportive educational intervention on knowledge, self-care behavior, disease activity and health status among arthritis patients. *Int J Res Orthop* 2018;4:771-7.