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EFFECT OF NURSE LED INTERVENTIONS ON PAIN AND ESR OF PATIENTS WITH RHEUMATOID ARTHRITIS

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ABSTRACT

This study has been undertaken to evaluate the effect of nurse led interventions on pain and ESR of patients with Rheumatoid Arthritis. Rheumatoid arthritis is the most common inflammatory arthritis which affect the small joints of the body. The symmetric joints are affected usually. The main features are joint pain and stiffness, later may progress to joint anomalies if not treated properly.

Methods: Quasi-experimental non-equivalent time series design was used in the study.

The sample consisted of 106 patients who are diagnosed as Rheumatoid Arthritis recruited by purposive sampling technique.

Results: There was statistically significant difference in the mean pre-test and posttests scores of pain among patients with rheumatoid arthritis in the intervention group ($p < 0.001$), but there was no significant change in the ESR values ($P > 0.05$)

Conclusions: Study concludes that the nurse led interventions were effective in reducing the pain of patients with Rheumatoid arthritis

KEYWORDS: Effect, nurse led interventions, Pain, ESR and Rheumatoid arthritis

I. INTRODUCTION

Rheumatoid Arthritis affects one or multiple joints characterized by inflammation, pain and stiffness. Rheumatoid Arthritis results in several limitations on day-to-day activities, work productivity and quality of life. It is a disease process (like cancer or diabetes) where the body's immune system mistakenly attacks its own healthy joints. It is a relatively common disease approximately 1 in 100 people get it and is often devastating to a person's body¹. Arthritis affects more than 180 million people in India, prevalence higher than many well-known diseases such as diabetes, AIDS and cancer. Around 14% of the Indian population seeks a doctor's help every year for this joint disease.²

Rheumatoid Arthritis symptoms vary from pain, stiffness and fatigue to malaise, and Rheumatoid Arthritis can cause functional impairment and reduced general health³. Even if it cannot be cured, the awareness of patients regarding the disease and its management, can empower them to actively participate in self-care management. Various measures include aerobic exercises, yoga, diet modifications, weight control, deep breathing, relaxation techniques such as meditation, listening to music and adequate sleep. Patient education will bring about not only changes in knowledge, but also changes in behavior and clinical status. Pain is one of the most distressing symptoms of patients with Rheumatoid Arthritis. Anaemia is also seen among patients with Rheumatoid Arthritis. Erythrocyte Sedimentation Rate is an indicator of clinical status of patients with Rheumatoid Arthritis.

Arthritis self-management education programs have been reported to reduce pain, disability and health care costs. Studies have shown that the patient education programmes including exercises and counselling sessions were effective in reducing the symptoms of patients with Rheumatoid Arthritis⁴.

An individually tailored, theory-based behavioral intervention was done among 150 patients with Rheumatoid Arthritis to find out the changes in daily sitting time, pain, fatigue, physical function, general self-efficacy, quality of life, blood pressure, blood lipids, HbA1c, body weight, body mass index, waist circumference and waist-hip ratio. The findings reported a between-group difference of 2.20 ($p < 0.0001$) hours/day for sitting time in favor of the intervention group. Most of the other outcomes were also in favor of the intervention group⁵.

A multicenter exploratory RCT to evaluate the efficacy of a Web-based self-management enhancing program for patients with RA have shown that high users of the intervention scored statistically significantly better than low users of the intervention on the baseline characteristics such as physical disability ($P = .03$), social functioning ($P = .02$), physical role limitations ($P = .03$), pain ($P = .03$), and all the NRS (Numeric Rating Scales) scales, that is, pain today ($P = .002$), mean pain last 2 weeks ($P = .02$), fatigue today ($P < .001$) and mean fatigue last 2 weeks ($P < .001$)⁶.

A Randomized controlled trial was conducted among 401 arthritis patients to test the effect of a 12-week, self-directed, multicomponent exercise program for adults with arthritis. Significant improvements, were seen in body strength, functional exercise capacity, body flexibility, pain, fatigue, stiffness, and arthritis management self-efficacy ($p < 0.0001$)⁷.

A systematic search of published scientific literature using bibliographic databases (Cochrane Library, Embase, Medline, CINAHL, PsycINFO) was performed from January 2000 to June 2015 to summarize the effect of psychological interventions in

improving outcomes for Rheumatoid Arthritis patients. Eight systematic reviews, were selected. A narrative approach was used to synthesize the findings from the reviews. It was found that psychological interventions have small positive short-term effects on the outcomes like pain, functional disability, depression, fatigue, coping, self-efficacy and patient global assessment⁸.

Usually used clinical outcome measures include, Disease Activity Score 28 (DAS28), Health Assessment Questionnaire (HAQ), Visual Analogue Scale (VAS) for pain and laboratory values (e.g.: Erythrocyte Sedimentation Rate (ESR), and C-reactive protein levels⁹.

A systematic review to identify the role of nurses in the management of chronic inflammatory arthritis from 2010 to 2018 was performed according to the PRISMA guidelines. The recommendations suggested that, there is increasing evidence for the role of nurses in the management of patients with chronic inflammatory arthritis.¹⁰

Many studies have shown that the cognitive and behavioral interventions bring about desirable changes in the clinical outcome among patients with Rheumatoid Arthritis. So, the researcher felt that a combination of educational, physical and psychological interventions led by a nurse would be beneficial for such patients as the nurses are there with the clients throughout their hospital encounters. The conceptual frame work of this study is based on the concepts of revised Health Promotion Model (HPM) by Nola J Pender¹¹.

II.METHODS

A. Study design population, sampling technique and sample size

A Quasi-experimental non-equivalent time series design was used in the study. The study was carried out among patients who are diagnosed as Rheumatoid Arthritis, and attending the Rheumatology clinic of new Medical College Hospital, Kozhikode from 5th July, 2019 to 28th February, 2020. Total 106 patients with rheumatoid arthritis were selected for the study by purposive sampling technique.

B. Criteria of sample selection

1. Inclusion criteria:

Patients who are diagnosed with Rheumatoid Arthritis with a duration of diagnosis of less than 15 years, who are in the age group of 35 - 70 years, who are willing to attend the demonstration of exercise for Rheumatoid Arthritis and to come for follow up and who are able to read and write Malayalam and English were included.

2. Exclusion criteria:

Patients who have joint deformities, osteoarthritis, psychiatric illness, systemic complications like pleurisy, pneumonitis, pulmonary hypertension, pericarditis, myocarditis, iritis, scleritis and Sjogren's syndrome and those who have attended similar programmes were excluded.

C. Data Collection procedure

Administrative permission was obtained from the Medical Superintendent, Principal and Head of Department of Medicine, New Medical College Hospital, Government Medical College, Kozhikode as per order number E2/3761/2019 Dated 28/02/2019. The nurse led interventions developed by the researcher was used in the study. It consisted of planned teaching programme of 30 minutes duration on Rheumatoid Arthritis and self-care management, demonstration and return demonstration of the exercises of 30 minutes duration and small group counselling.

A pilot study was conducted from 21st March, 2019 to 22nd June, 2019 to determine the feasibility of design, intervention protocol and verify any major flaws in design or intervention. The study design, intervention and data collection plan were found to be feasible and practical. It was difficult to obtain patients who fulfilled the inclusion criteria of age between 35 - 60 years, so the group was changed to 35 -70 years, the duration of diagnosis was also extended from 10 years to 15 years. Pilot study report was approved and researcher was permitted to proceed with the main study. Therefore, no changes were made in design, intervention plan or assessment part. The methodology was found to be feasible and the data were amenable for statistical analysis.

The period of data collection for main study was from 5th July, 2019 to 28th February, 2020. A purposive sampling technique was used to recruit samples in the study. Subjects who were attending the Rheumatology clinic of NMCH, Kozhikode were scrutinized for eligibility criteria. Those fulfilling inclusion criteria were approached for obtaining a written consent after giving an adequate explanation about the study. Subjects consented to participate in the study were recruited. Confidentiality was also assured.

The eligible patients attending the Rheumatology clinic on 1st and 3rd Friday were allotted to intervention group and those on 2nd and 4th Friday to control group to avoid contamination. The intervention group received Nurse Led Interventions and routine care and those in the control group received routine care alone. The patients came for follow up once in 4 weeks, so the follow ups were done on 4, 8 and 12 weeks after the intervention. Socio-personal and clinical variables were collected using a semi-structured interview schedule. Biophysical values such as ESR and Hb were obtained from the clinical record of the patient. Pain assessment was done using the Visual Analogue Scale. The visual analogue scale for pain is a self-administered scale, which has rating from 0 to 100. Zero '0' corresponds to no pain and '100' to most severe pain. The patient is asked to mark the point of his/her perceived pain in the scale.

1. Hypotheses:

H₁: There is a significant difference in the pain among the patients with Rheumatoid Arthritis in the intervention and the control group after the nurse led interventions.

H₂: There is a significant difference in the ESR among the patients with Rheumatoid Arthritis in the intervention and the control group after the nurse led interventions.

2. Statistical analysis:

Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS, version 16). The statistical tests, both descriptive and inferential, were used for analyzing the data. The descriptive statistics used were range, mean, median, standard deviation and mean percentage mean. Inferential statistics used was student 't' test.

D. Ethical Considerations

This study received approval from Scientific Review Committee (SRC No:163/19 Dated 05/03/2019), Government College of Nursing, Kozhikode. Obtained Ethical Clearance from Institutional Ethical Committee (IEC number: CNC/105/2019-PhD Dated 15/03/2019), Government College of Nursing, Kozhikode. Written informed consent was obtained from study participants and confidentiality was assured.

III.RESULTS

Data was analysed using descriptive and inferential statistics.

Table – I
Distribution of Selected Socio Demographic Variables of
Subjects with Rheumatoid Arthritis

(N = 106)

Demographic Variables	Sub-Variables	Experimental Group (n = 54)		Control Group (n = 52)		Chi-square test value	df	P value
		No.	%	No.	%			
Age (in years)	≤40	10	18.5	6	11.5	3.869	3	0.276 (NS)
	41-50	20	37.0	18	14.6			
	51-60	12	22.2	20	38.5			
	>60	12	22.2	8	15.4			
Gender	Male	8	14.8	3	5.8	2.331	1	0.202 (NS)
	Female	46	85.2	49	94.2			
Religion	Hindu	23	42.6	24	46.2	1.784	2	0.410 (NS)
	Islam	27	50.0	27	51.9			
	Christian	4	7.4	1	1.9			
Educational Status	Primary School	25	46.3	24	46.2	4.898	4	0.298 (NS)
	High School	22	40.7	20	38.5			
	College	3	5.6	-	-			
	Technical / Professional	-	-	1	1.9			
	No Formal Education	4	7.4	7	13.5			
Marital Status	Married	45	83.3	40	76.9	3.617	3	0.306 (NS)
	Unmarried	4	7.4	2	3.8			
	Widow/Widower	5	9.3	8	15.4			
	Divorced	-	-	2	3.8			
Type of Family	Nuclear	32	59.3	34	65.4	1.664	2	0.435 (NS)
	Joint	22	40.7	17	32.7			
	Extended	-	-	1	1.9			
Roles in the Family	Spouse	41	75.9	36	69.2	4.337	3	0.631 (NS)
	Parent	26	48.2	29	55.8			
	Grandparent	4	7.4	6	11.5			
	Others	4	7.4	2	3.8			
Number of Family Members	1 – 3	11	20.4	11	21.2	4.113	2	0.942 (NS)
	4 – 6	34	63.0	36	69.2			
	>6	9	16.6	5	9.6			
Occupation	Housewife	43	79.6	47	90.4	5.533	2	0.137 (NS)
	Coolie	8	14.8	5	9.6			
	Agriculture	3	5.6	-	-			
Economic Status (Per year)	Rs. >27,000	16	29.6	19	36.5	1.760	1	0.624 (NS)
	Rs. <27,000	38	70.4	33	63.5			
Predominant Support System	Family	49	90.7	43	82.7	9.023	5	0.108 (NS)
	Friends	-	-	1	1.9			
	Relatives	-	-	6	11.5			
	Family and Relatives	2	3.7	1	1.9			
	Family, Friends and Relatives	1	1.9	-	-			
	Others	2	3.7	1	1.9			

Table I shows distribution of selected socio demographic variables of subjects with Rheumatoid Arthritis. The data presented in the table I revealed that 20 (37.0%) subjects in the intervention group belonged to the age group 41-50 years and 20 (38.5%) subjects in the control group belonged to the age group 51-60 years. Most of the subjects 46 (85.2%) in the intervention group and 49(94.2%) control group were females. Half of the subjects 27(50.0%) were Islam, 23(42.6%) were Hindus in the intervention group, similarly in the control group 27(51.9%) were Islam and 24(46.2%) were Hindus. Regarding educational status, 25(46.3%) subjects had only primary education in the intervention group, like wise in the control group 24(46.2%) had primary education. Most of the subjects 45(83.3%) in the intervention and 40(76.9%) in the control group were married. Distribution of subjects according to number of family members revealed that 34(63%) subjects in the intervention group and 36(69.2%) subjects in the control group were having

four to six members in the family. In relation to occupation, 43(79.6%) in the intervention and 47(90.4%) in the control group were house wives. Regarding the family income, 38(70.4%) subjects in the intervention group and 33(63.5%) in the control group were having an annual income of more than Rs. 27000/-. Distribution of subjects according to predominant support system revealed that 49(90.7%) subjects in the intervention group and 43(82.7%) in the control group had family as the major support system. The chi-square values obtained were not significant ($P>0.05$) indicated that, both the groups were similar and comparable with regard to these socio-demographic variables.

Table - II
Distribution of Selected Clinical Variables of Subjects
with Rheumatoid Arthritis

(N=106)

Clinical Variables	Sub-Variables	Experimental Group (n = 54)		Control Group (n = 52)		Chi-square test value	df	P value
		No.	%	No.	%			
Age of Onset (in years)	<40	19	35.2	18	34.6	0.017	2	0.982 (NS)
	41-50	24	44.4	24	46.2			
	>50	11	20.4	10	19.2			
Duration of Diagnosis	<5	35	64.8	32	61.5	7.680	2	0.053 (NS)
	6-10	8	14.8	14	26.9			
	11-15	11	20.4	6	11.6			
Family History	Yes	7	13.0	7	13.5	0.006	1	0.940 (NS)
	No	47	87.0	45	86.5			
Diabetic	Yes	5	9.3	4	7.7	0.154	1	0.714 (NS)
	No	49	90.7	48	92.3			
Hypertensive	Yes	2	3.8	3	5.8	2.541	1	0.112 (NS)
	No	52	96.2	49	94.2			
Habit of Smoking	Yes	3	5.6	2	3.8	0.172	1	0.678 (NS)
	No	51	94.4	50	96.2			
Habit of Smoking by Spouse	Yes	16	29.6	13	25.0	0.286	1	0.593 (NS)
	No	38	70.4	39	75.0			
Management of Disease	Pharmacotherapy	51	94.4	49	94.2	0.002	1	0.962 (NS)
	Pharmacotherapy and physiotherapy	3	5.6	3	5.8			
Habit of Exercise Regularly	Yes	12	22.2	14	26.9	0.316	1	0.574 (NS)
	No	42	77.8	38	73.1			
Daily Hours of Work	0 – 4	14	25.9	20	38.5	11.56	2	0.481 (NS)
	5 – 8	35	64.8	24	46.2			
	>8	5	9.3	8	15.4			
Daily Hours of Rest	0 – 2	27	50.0	21	40.4	8.746	2	0.645 (NS)
	3 – 4	11	20.4	16	30.8			
	> 4	16	29.6	15	28.8			
Daily Hours of Sleep During Night	0 – 4	7	13.0	10	19.2	6.866	2	0.651 (NS)
	5 – 7	36	66.7	29	55.8			
	> 7	11	20.4	13	25.0			
Sleep During Day	Yes	18	33.3	16	30.8	0.080	1	0.777 (NS)
	No	36	66.7	36	69.2			
Frequency of Outing	Once in a week	10	18.5	4	7.7	6.729	4	0.151 (NS)
	Once in two weeks	2	3.7	1	1.9			
	Once in three weeks	26	48.1	23	44.2			
	Once in a month	16	29.6	21	40.4			
	Not go for outing	-	-	3	5.8			

Table II presents the distribution of selected clinical variables of subjects with Rheumatoid Arthritis. Regarding the age of onset 24(44.4%) subjects in the intervention group and 24(46.2%) subjects in the control group have the age of onset of illness at 41-50 years. The family history of Rheumatoid Arthritis revealed that, 47(87%) subjects in the intervention group and 45(86.5%) subjects in the control group did not have family history of Rheumatoid Arthritis. The table depicts that, 51(94.4%) subjects in the intervention group and 50(96.2%) subjects in the control group were nonsmokers. The exercise habits revealed that 42(77.8%) subjects in the intervention group and 38(73.1%) subjects in the control group were not doing exercise. Sleep habits revealed that, 36(66.7%) subjects in the intervention group and 29(55.8%) subjects in the control group slept for 5-7 hours per day. The chi-square values obtained were not significant ($P>0.05$) indicated that, both the groups were similar and comparable with regard to these clinical variables.

Table III

Range, mean, standard deviation and median of pain score before and after nurse-led intervention among patients with rheumatoid arthritis

	Experimental Group			Control group		
	Range	Mean (\pm SD)	Median	Range	Mean (\pm SD)	Median
Pretest	30-100	65.22 (\pm 21.79)	70.0	20-100	69.73 (\pm 20.48)	70.0
Post-test 1	30-100	65.22 (\pm 21.79)	70.0	20-100	69.92 (\pm 20.34)	70.0
Post-test 2	15-100	42.50 (\pm 16.42)	40.0	20-80	53.46 (\pm 16.44)	50.0
Post-test 3	10-100	32.67 (\pm 15.41)	30.0	20-100	46.92 (\pm 18.84)	40.0

Table III shows the mean, standard deviation and mean percentage of pain score before and after nurse-led intervention among patients with rheumatoid arthritis. In experimental group the mean pain score during post-test 3 (32.67 ± 15.41) was lower than pre-test (65.22 ± 21.79), post-test 1 (65.22 ± 21.79) post-test 2 (42.50 ± 16.42). In control group, the mean pain score during pre-test was 69.73 ± 20.48 , post-test 1 was 69.92 ± 20.34 , post-test 2 was 53.46 ± 16.44 , and post-test 3 was 46.92 ± 18.84 , which was greater than the experimental group mean scores after intervention. Hence the perceived pain among the intervention group is lower than that of the control group.

Table IV

Range, mean, standard deviation, median, and mean percentage of Hemoglobin level before and after nurse-led intervention among patients with rheumatoid arthritis

	Experimental Group			Control group		
	Range	Mean (\pm SD)	Median	Range	Mean (\pm SD)	Median
Pre-test	9-14	11.13 (\pm 1.10)	11.0	7.50-14.70	11.30 (\pm 1.29)	11.40
Post-test 1	9-14	11.13 (\pm 1.10)	11.0	7.50-14.70	11.30 (\pm 1.29)	11.40
Post-test 2	9-14	11.13 (\pm 1.10)	11.0	7.50-14.70	11.30 (\pm 1.29)	11.40
Post-test 3	9-14	11.13 (\pm 1.10)	11.0	7.50-14.70	11.30 (\pm 1.29)	11.40

Table IV shows the mean, standard deviation and mean percentage of Haemoglobin level before and after nurse-led intervention among patients with rheumatoid arthritis. In experimental group the mean Haemoglobin level during pre-test, post-test 1, post-test 2 and post-test 3 was 11.13 ± 1.10 . No change in Haemoglobin level was reported. In control group the mean Haemoglobin level during pre-test, post-test 1, post-test 2 and post-test 3 was 11.30 ± 1.29 . No change in Haemoglobin level was reported in control group as well.

Table V

Range, mean, standard deviation, median, and mean percentage of ESR value before and after nurse-led intervention among patients with rheumatoid arthritis

	Experimental Group			Control group		
	Range	Mean (\pm SD)	Median	Range	Mean (\pm SD)	Median
Pre-test	9-100	40.57 (\pm 21.29)	35.50	8 -100	45.62 (\pm 23.48)	42.0
Post-test 1	9-100	40.57 (\pm 21.29)	35.50	8 -100	45.62 (\pm 23.48)	42.0
Post-test 2	9-100	40.57 (\pm 21.29)	35.50	8 -100	45.62 (\pm 23.48)	42.0
Post-test 3	9-100	40.57 (\pm 21.29)	35.50	8 -100	45.62 (\pm 23.48)	42.0

Table V shows the mean, standard deviation and mean percentage of ESR value before and after nurse-led intervention among patients with rheumatoid arthritis. In experimental group the mean ESR value during pre-test, post-test 1, post-test 2 and post-test 3 was 40.57 ± 21.29 . No change in ESR value was reported. In control group the mean ESR value during pre-test, post-test 1, post-test 2 and post-test 3 was 45.62 ± 23.48 . No change in ESR value was reported in control group as well.

Table - VI

Comparison of Pain and ESR of Subjects in the Experimental Group and Control Group during Pretest, Posttest - 1, Posttest-2 and Posttest – 3

(N=106)

Clinical Outcome	Intervention	Experimental Group (n = 54)			Control Group (n = 52)			Mean difference	Student 't' test
		Mean	SD	Median	Mean	SD	Median		
Pain Score (Perceived)	Pretest	65.22	21.79	70.0	69.73	20.48	70.0	4.51	t= 1.097, p=0.275 df=104 (NS)
	Posttest 1	65.22	21.79	70.0	69.92	20.34	70.0	4.70	t= 1.147 p=0.254 df=104 (NS)
	Posttest 2	42.50	16.42	40.0	53.46	16.44	50.0	10.96	t= 3.434 p=0.001*** df=104 (S)
	Posttest 3	32.67	15.41	30.0	46.92	18.84	40.0	14.26	t= 4.271 p<0.001*** df=104 (S)
Erythrocyte Sedimentation Rate	Pretest	40.57	21.29	35.50	45.62	23.48	42.0	5.04	t= 1.159, p=0.249 df=104 (NS)
	Posttest 1	40.57	21.29	35.50	45.62	23.48	42.0	5.04	t= 1.159, p=0.249 df=104 (NS)
	Posttest 2	40.57	21.29	35.50	45.62	23.48	42.0	5.04	t= 1.159, p=0.249 df=104 (NS)
	Posttest 3	40.57	21.29	35.50	45.62	23.48	42.0	5.04	t= 1.159, p=0.249 df=104 (NS)

***S - Very Highly Significant

NS – Non Significant

Table VI shows the comparison of pain and ESR of subjects in the experimental group and control group during pretest, posttest 1, posttest 2 and posttest 3. There was no significant difference between the experimental group and control group in perceived pain as indicated by 't' values at $p > 0.05$ at pretest and posttest I. In posttest 2 and posttest 3 there was highly significant difference between the experimental group and control group in perceived pain as indicated by 't' values at $p = 0.001$ and $p < 0.001$ respectively. Therefore, there is a significant reduction in the perceived pain of patients with Rheumatoid Arthritis who received Nurse Led Interventions and routine care than those who received routine care alone. Hence the hypothesis - 'There is a significant difference in the pain among the patients with Rheumatoid Arthritis in the intervention and the control group after the nurse led interventions' was accepted.

There was no significant difference between the experimental group and control group in ESR at pretest as well as in posttests as indicated by 't' values at $p > 0.05$. The ESR value of patients with Rheumatoid Arthritis who received Nurse Led Interventions and routine care and those who received routine care alone were not significantly different. Hence the hypothesis - 'There is a significant difference in the ESR among the patients with Rheumatoid Arthritis in the intervention and the control group after the nurse led interventions' was not accepted.

IV.DISCUSSION

Various strategies such as educational, behavioral and cognitive strategies are utilized to enhance patient participation in treatment. The nurse can promote a healthy positive life course adaptation by focusing on enhancing awareness, promoting comfort and coping and training for self-care. Many previous studies have shown that the educational programme incorporating exercise improve the knowledge, selfcare behaviour and clinical status of patients with Rheumatoid Arthritis. The nurse led care is gaining momentum in terms of its cost effectiveness and feasibility. The finding of the present study clearly showed that the nurse led interventions were effective in reducing the pain and thus improving the clinical status of patients with Rheumatoid Arthritis. The perceived pain among patients with arthritis in the intervention group was significantly lower than that among the control group. Similar findings were reported by Ndosi, et al.¹² in a systematic analysis to assess the effect of NLC for patients with Rheumatoid Arthritis, significant improvements ($P < 0.001$) in clinical outcomes (disease activity, pain, fatigue, and morning stiffness) of nurse led care group. Likewise, a significant between-group difference in disability ($P = 0.022$), function ($P = 0.011$),

non-dominant handgrip strength ($P = 0.009$), self-efficacy ($P = 0.021$) for pain and ($P = 0.039$ for symptoms), and disease activity ($P = 0.047$) were noted in a systematic review by Manning, et al. ¹³ in an investigation to evaluate the effect of an exercise programme. Reduction in pain intensity ($P = 0.006$.) and DAS 28 score ($P < 0.00001$) were reported following a mindfulness group intervention by Zhou, et al. ¹⁴

V. CONCLUSION.

Patients with Rheumatoid Arthritis need support from the family and friends to cope with the disease process. Ability to engage in self-care behaviour largely depends on the knowledge of patient regarding the disease and treatment, and the willingness to engage in healthy behaviour. The nurse can play a lead role here to impart knowledge and educate them regarding self-care. Hence the researcher has undertaken this study to assess the effect of Nurse Led Intervention on pain and ESR of patients with Rheumatoid Arthritis. Nurse Led Interventions in the form of planned teaching on Rheumatoid Arthritis and self-care management, demonstration and teaching of exercises, small group counseling and routine care were given to subjects in the experimental group. The control group received only routine care. Posttests were done at 4 weeks, 8 weeks and 12 weeks. One subject from experimental group and 3 subjects from control group were lost during follow up. The data collected were categorized and analyzed based on the study objectives and hypothesis using descriptive and inferential statistics. SPSS Version 16.0 was used to analyze the data.

The findings revealed that the patients with Rheumatoid Arthritis who received the Nurse Led Interventions and routine care had improvement in the clinical status when compared to those who received the routine care alone. It is evident from findings of the present and previous studies that Nurse Led Interventions were very effective in improving the health promoting behaviour of patient with Rheumatoid Arthritis which in turns promotes quality of life. The study have shown that the Nurse Led Interventions can be effectively implemented in Rheumatology clinics and centres to enhance the clinical status and self-care ability of patients with Rheumatoid Arthritis. Limitations of the study were :-The study was conducted on an outpatient basis, so close monitoring of the subjects was not possible. The patients were asked to maintain a diary to record the exercise details, and the investigator has to assume that they were truthful. The present study findings have implications in various Nursing disciplines such as Nursing practice, Nursing education, Nursing administration and Nursing research

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