



EFFECT OF EDUCATIONAL INTERVENTION ON ACTIVITIES OF DAILY LIVING (ADL) AMONG PATIENTS WITH RHEUMATOID ARTHRITIS

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Abstract

Background: Rheumatoid Arthritis (RA) poses significant challenges to the daily lives of affected individuals, impacting both Activities of Daily Living (ADL) and pain intensity. Therefore, it is essential to conduct this study to assess the daily functioning and comprehension of disease management in individuals diagnosed with rheumatoid arthritis.

Objective: To evaluate the effect of an educational intervention in improving the ADL among patients with RA.

Methodology: A randomized controlled trial design was used to investigate this intervention. A total of 48 participants were recruited with help of systematic sampling and divided into intervention group and control group. The educational intervention consisted of comprehensive guidance on managing RA, including self-care, medication management, and lifestyle adjustments. Data were collected through validated assessments of ADL, conducted both before and after the intervention. Statistical analysis, including descriptive statistics and inferential tests, was applied to assess the impact of the educational intervention on the study outcomes.

Results: The study's findings showed that the majority of participants were males (64.6%), with 41.7% falling within the age range of 35 to 45, and 43.8% being single. Additionally, the results revealed reduction in the score of disability index in Activities of Daily Living (ADL) following the educational intervention. In the control group, the mean ADL score showed (23.7±6.12), while the intervention group exhibited a more substantial improvement with a mean score of (15.0±6.85).

Conclusion: This study highlights the potential benefits of educational interventions in enhancing the daily lives of Rheumatoid Arthritis patients by improving ADL. The findings underscore the importance of comprehensive education in the management of chronic conditions and provide insights for healthcare professionals and policymakers to better support individuals living with RA. Further research and long-term follow-up studies are recommended to consolidate these promising results.

Keywords: Educational Intervention, Activities of Daily Living, Rheumatoid Arthritis

Introduction: Rheumatoid arthritis RA is a chronic, inflammatory disease leading to stiffness, synovitis-induced swelling, and joint discomfort, prevalent worldwide with 1-2% prevalence, notably higher in Europe and North America, affecting one million individuals in the USA (Scherer et al.,

2020). The prevalence of RA in our nation ranged from 0.49 to 0.38 percent. Women experience RA 2.5 times as frequently than men do. Although RA can strike at any age, the most typical age range for occurrence is between 40 and 60. Around 30% of RA cases in the senior group are found worldwide, and the incidence of geriatric RA patients is rising (Nagy et al., 2021).

Rheumatoid Arthritis that develops in old age may differ dramatically from other young adult RA patient groups. Due to the progression of the disease, older RA patients may experience a greater functional impairment (Elham Mohammed et al., 2022). Geriatric adults with RA have a lower functional level, according to certain studies on the condition. Another study found that patients with RA who get it at an elderly age had more functional disability than those with inflammatory polyarthritis. Symptoms of RA include pain, stiffness, swollen joints, sleeplessness, exhaustion, and later-stage joint abnormalities (Rodríguez-García et al., 2020).

Pain is the most prevalent and significant symptom of this illness. Health care professionals and women with rheumatoid arthritis are both concerned about pain. Along with low self-esteem, tiredness, depression, and motor impairment all of which are side effects of pain RA discomfort is one of the predictors of disability (Ahmed & Amen, 2018). RA patients endure heightened physical disability due to painful, stiff, and distorted joints. These challenges impact their physical, mental, and social well-being from the disease's onset. Controlling symptoms involves pain relief and inflammation prevention. Initial pharmacological treatment includes Disease-Modifying Anti-Rheumatic Drugs (DMARDs). The secondary treatment goal is inflammation and discomfort reduction, achieved with medications like corticosteroids and NSAIDs (Gaballa et al., 2022).

The term "daily activities that are necessary for ordinary living," which is credited to Marjorie Sheldon 1935, was first used to describe activities of daily living (ADLs) in the 1950s. The term "activities of daily living" was first used by Edith Buchwald as part of a checklist for evaluation in 1949. In the 1950s, normal clinical evaluations began to include a look at the activities a patient was able to carry out (Rustamovich et al., 2023). In order to assess the degree of care for elderly individuals who were institutionalized and to assess readiness for military service during World War II, measurement of what were referred to as "basic activities of daily living" (BADLs) was developed (Khusainova et al., 2023).

Daily tasks known as "activities of daily living" (ADLs) are performed on a regular basis. Regularly by people in their daily lives and that are necessary for independent living without the aid of family or outside support. They include activities carried out outdoors as well as indoors and elsewhere (Ferebee et al., 2022). Measuring a person's ability or inability to perform ADLs is crucial when describing a person's functional state and then putting an intervention in place. The majority of the time, ADL examinations are used in nursing and in the rehabilitation of elderly and disabled people. When developing efforts for health research, ADL measurement is essential (Slagter et al., 2022). The aim of this study was to explore how targeted educational programs may enhance patients' ability to manage daily tasks, improve their overall quality of life, and mitigate the impact of RA on their functional independence.

Study Hypothesis:

- **HI:** There is an effect of educational intervention on activities of daily living (ADLs) among patients with rheumatoid arthritis
- **HO:** There is no effect of educational intervention on activities of daily living (ADLs) among patients with rheumatoid arthritis.

Material & Methods

The study employed a randomized control trial design to evaluate the effectiveness of educational interventions on the "Rheumatoid Arthritis Disease Activity Index." The educational sessions covered various aspects, including monitoring pain, range of motion, and participation in activities of daily living, along with medication management, pain relief measures, and lifestyle modifications. The study was conducted in the Rheumatology Outpatient Department of Fatima Memorial Hospital,

Lahore, targeting rheumatoid arthritis patients through systematic probability sampling. The sample size of 48 individuals was determined based on a calculated formula, considering a 20% dropout rate. The study duration was approximately 9 months, with ethical approval obtained from the Research Ethical Committee of The University of Lahore. Inclusion criteria comprised individuals of all genders aged 20-65 with confirmed rheumatoid arthritis diagnoses, while exclusion criteria included individuals with cardiac conditions classified as stage III or IV. The Modified Health Assessment Questionnaire (MDHAQ) served as the study tool, assessing physical function, pain intensity, and disease activity. Data collection occurred in three phases: pre-intervention, intervention, and post-intervention, with nursing education sessions conducted in the outpatient clinic. The data analysis involved descriptive and inferential statistics using SPSS software, including the Kolmogorov-Smirnov test and independent T-test to compare group means, indicating a normal distribution of data and significant differences between groups.

Results

Table No 1: Demographic Variables of the study Participants

		Frequency	Percent
Gender	Male	31	64.6
	Female	17	35.4
Age In Years	25- 35	18	37.5
	35-45	20	41.7
	45-55	7	14.6
	>55	3	6.3
	Single	21	43.8
Marital Status	Married	20	41.7
	Widow	4	8.3
	Divorced	3	6.3
Educational Qualification	Illiterate	7	14.6
	Primary Level	14	29.2
	Secondary Level	15	31.3
	Higher-level	12	25.0
Occupation	Office job	13	27.1
	Labor	5	10.4
	Teaching & Tutoring	4	8.3
	Freelancing	3	6.3
	Health care	6	12.5
	Entrepreneurship	3	6.3
	Remote work	4	8.3
	Jobless or House wife	10	20.8
	Total	48	100.0

Analyzed by frequency 'n' and percentage '%'

The survey analyzed demographic characteristics and occupational distribution within the sample. In terms of gender, 64.6% were male and 35.4% were female. Age-wise, 41.7% were in the 35-45 age group, and 37.5% were in the 25-35 bracket. Marital status varied, with 43.8% single, 41.7% married, 8.3% widowed, and 6.3% divorced. Education levels ranged from 14.6% illiterate to 25.0% with education beyond the secondary level. Regarding occupations, 27.1% held office jobs, 10.4% were in labor-related roles, 8.3% in teaching, 6.3% freelanced, 12.5% worked in healthcare, 6.3% were entrepreneurs, and 8.3% embraced remote work. Notably, 20.8% were jobless or engaged in household responsibilities. These insights are vital for tailoring policies, training, and employment opportunities to the population's needs, as depicted in Table 1.

Table No 2: Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Height in Inch	0.109	48	0.200*	0.945	48	0.065
Weight in KG	0.108	48	0.200*	0.945	48	0.054

*. This is a lower bound of the true significance.

a. Lilliefors no Significance Correction if >0.05 show normality

The data presents results from normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) on "Your Height in Inch" and "Your Weight in KG" for a sample of 48 individuals. For height, both tests suggest an approach to normality (statistic of 0.109 and 0.945, significance levels > 0.05). Similarly, for weight, the tests indicate a tendency toward normal distribution (statistic of 0.108 and 0.945, significance levels > 0.05). The notation 'a. Lilliefors no Significance Correction if >0.05 show normality' indicates no Lilliefors correction was applied, and if the significance level is > 0.05, it implies some degree of normality. In Table 2, the results highlight an approaching normal distribution for both variables.

Table No 3: The activities of daily living among patient with rheumatoid arthritis

Activity of daily Living	Score	n	%	X	S.D
Poor activity of daily living	16 -30	30	62.5		
Average activity of daily living	8-15	17	35.4	18.23	5.88
Good activity of daily living	0-7	1	2.1		
Total		48	100.0	100.0	

Analyzed by mean (X), Standard Deviation (S.D), frequency (n) and percentage (%)

The data categorizes individuals based on their "Activity of Daily Living" into three groups: "Poor," "Average," and "Good." "Poor" includes 62.5% (30 individuals), scoring 16-30, and indicating lower functionality. "Average" comprises 35.4% (17 individuals), scoring 8-15, with a mean of 18.23, suggesting moderate functionality. "Good" has 2.1% (1 individual), scoring 0-7, reflecting higher functionality. These categories reveal variations in daily living activities, crucial for healthcare and support interventions, as outlined in Table 3.

Table No 4: The Rheumatoid Arthritis Activity index among patients

Rheumatoid Arthritis Disease Activity Index	Score	n	%	X	S.D
Independent	0-4	4	8.3		
Patient is doing his task with help	5 -16	5	10.4	19.35	7.80
Patient is dependent	17-31	37	77.1		
Patient was disable	32- 48	2	4.2		
Total		48	100.0	100.0	

Analyzed by mean (X), Standard Deviation (S.D), frequency (n) and percentage (%)

The data categorizes individuals based on their "Rheumatoid Arthritis Disease Activity Index." In the "Independent" category (8.3%, 4 individuals), scores 0-4 indicate high independence. The "Patient is doing his task with help" group (10.4%, 5 individuals) scores 5-16, suggesting independence with some assistance. The majority (77.1%, 37 individuals) falls into "Patient is dependent" (scores 17-31), indicating higher dependency. Lastly, the "Patient was disabled" group (4.2%, 2 individuals) scores 32-48, indicating high disability and dependence. These categories offer insights into disease activity and functional independence among rheumatoid arthritis patients, guiding treatment and support strategies for healthcare professionals and caregivers as shown in the table 4.

Table No 5: Effect of educational intervention on activities of daily living (ADLs) among patients with rheumatoid arthritis.

	Study Group	N	Mean	S.D	Std. Error	P-Value
Activity of daily Living	Control	24	21.3	5.47	1.11	0.001
	Interventional	24	15.0	4.49	0.91	

Analyzed by using independent T test with $P < 0.05$

The study compared "Activity of Daily Living" between a control group (24 individuals, mean score 21.3) and an interventional group (24 individuals, mean score 15.0). The interventional group showed a statistically significant improvement (p-value = 0.001), suggesting the studied intervention may positively impact daily activities, as detailed in Table 5.

Table No 06: Effect of educational intervention on Activity index among patients with rheumatoid arthritis

	Study Group	N	Mean	S.D	Std. Error	P-Value
Rheumatoid Arthritis Disease Activity Index	Control	24	23.7	6.12	1.25	0.000
	Interventional	24	15.0	6.88	1.40	

Analyzed by using independent T test with $P < 0.05$

The study compared the Rheumatoid Arthritis Disease Activity Index between a control group (24 individuals, mean score 23.7) and an interventional group (24 individuals, mean score 15.0). The interventional group showed a statistically significant improvement (p-value = 0.000), indicating a substantial impact of the studied intervention on reducing disease activity, as detailed in Table 06.

Discussion:

The study's key findings reveal that around 65% of the participants were male, with the largest age group (42%) falling between 35 and 45 years old. Marital statuses varied, with approximately 44% being single, 42% married, 8% widowed, and 6% divorced. Additionally, 31% of the participants had completed secondary education. Likewise, Ibrahim and Mohamed (2020) the entire group was comprised of married males with an average age of 39.50 ± 6.997 years. About 68.3% of participants had no formal education and lived in urban areas. Half of the patients had an illness duration of 1 to 3 years.

In Elsayed Hussein et al. (2022) study, 75% of women aged 40 and above were married, with 33.8% possessing basic literacy skills and 30% having attained education at a certain level. However Tański et al. (2021), study revealed that 55% of participants were aged 40 to 60, with nearly all (96%) being female. The majority (83.8%) identified as housewives, and about 80% were married and living with their spouses. More than half (54.4%) had not received formal education.

Likewise, in Selim et al. (2019) individuals aged 60 to 66, categorized as "young old," were predominantly married (80%). About 46.7% had completed elementary education. Gender-specific correlations in rheumatoid arthritis were noted, with males predominating in the observed arthritis cases. Another study highlighted females experiencing higher disease activity levels and poorer functional outcomes.

Our study categorized individuals into three groups: "Poor activity of daily living" (62.5%), "Average activity of daily living" (35.4%), and "Good activity of daily living" (2.1%). These distinctions are crucial for assessing individuals' daily task abilities and can guide healthcare and support interventions. In Fong (2023) study, 22% of patients exhibited good quality of daily living, 30% had average quality, and 48% had poor quality. Katchamart et al. (2019) found that disease severity and psychological disturbance negatively impact the quality of life in RA patients, emphasizing the need to consider these factors in RA management for improved care standards.

In our study assessing disease activity in rheumatoid arthritis patients, 8.3% were categorized as

independent, 10.4% reported doing tasks with help, and a majority demonstrated a high level of independence in performing tasks associated with their condition. These findings align with Rodríguez-García et al. (2020) research, indicating that general and domain-specific self-confidence, pain severity, and disease duration are indicators of hand functional impairment in Rheumatoid disease. They propose early interdisciplinary assessments of these factors for effective intervention in addressing hand disability.

Furthermore Kilic et al. (2018), highlighted the significant impact of pain on both hand function and activity participation in individuals with Rheumatoid Arthritis (RA). Their study indicated that pain, the primary issue, led to reduced hand functionality during daily activities, resulting in a decline in overall activity participation. The research emphasizes the importance of implementing teaching strategies focused on managing pain and preserving hand function to enhance the capacity of individuals with RA to engage in daily activities and promote independence.

Regarding to our study findings showed that intervention have a good impact on reducing pain levels, as evidenced by the lower pain scores in the interventional group compared to the control group. Study conducted by Li et al. (2020) revealed a notable impact on both pain levels and individuals' perception of their walking habits. They proposed that physical therapists could play a crucial role in enhancing physical activity among individuals with inflammatory arthritis. Li et al. (2020) suggested that additional investigations are required to comprehensively assess the intervention's effectiveness across various diseases. In our own study, we observed that the intervention might produce a favorable outcome in terms of reducing pain scores.

However the study of Katz et al. (2018) study found no significant overall differences in fatigue scores between groups. However, both intervention groups demonstrated a notable reduction in fatigue levels. Pope (2020) study suggested that interventions hold promise for alleviating pain and improving physical well-being in individuals with inflammatory conditions.

The study assessed the Rheumatoid Arthritis Disease Activity Index in a control group (mean=23.7, SD=6.12) and an interventional group (mean=15.0, SD=6.88, p-value < 0.001). Results suggest the intervention has potential for substantial improvement in rheumatoid arthritis disease activity.

Similarly the study of Elsayed Hussein et al. (2022) study reveals significant improvements in knowledge and self-care practices among women with rheumatoid arthritis (RA) through nursing instructions. The intervention led to enhanced functional ability scores and reduced pain intensity, demonstrating the effectiveness of nursing guidance in improving outcomes for women with RA.

Furthermore Hussein Mohammed et al. (2023) study showed substantial improvement in knowledge and self-care practices for women with rheumatoid arthritis (RA). Implementation of RA self-care guidelines resulted in enhanced quality of life, reduced pain intensity, and improved health status. The guidelines proved effective in positively impacting disability and pain scores, making them valuable for enhancing overall quality of life and daily functioning in individuals with RA. However the study of Selim et al. (2019) study found no significant improvements in the average total daily activity score for elderly patients with rheumatoid arthritis after the application of suggested interventions..

Kusnanto et al. (2018) emphasized comprehensive training for rheumatology nurses and family caregivers in treating rheumatoid arthritis, in line with Chen and Wang's recommendations. Encouraging patients to share experiences during follow-up appointments was highlighted.

Conclusion:

The study revealed that the majority of participants were males aged 35 to 45, primarily single or married, with a significant proportion having a secondary education level. Initially, most patients fell into the "Poor activity of daily living" category, some in the "Average activity of daily living" category, and a few in the "Good activity of daily living" category. After educational intervention, a notable improvement was observed in the experimental group, showcasing good daily living, reduced joint pain, and improved activity index scores. These insights highlight the diverse abilities and support needs within the rheumatoid arthritis patient population, crucial for healthcare planning. The findings suggest that the intervention significantly impacted disease activity improvement in individuals with rheumatoid arthritis.

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