

# HEALTH-RELATED QUALITY OF LIFE ASSESSMENT IN PATIENTS WITH RHEUMATOID ARTHRITIS USING SF-36, IN A TERTIARY HOSPITAL IN KPK, PAKISTAN

Shahzada Alam Zeb <sup>1</sup>, Muhammad Mustafeez Waheed Jami <sup>2</sup>, Amir Rashid Khattak <sup>3</sup>, Shakeel Ahmed Jadoon<sup>4</sup>, Haris Khan<sup>5</sup>

<sup>1</sup>. Post graduate resident medicine Ayub teaching hospital, Abbottabad, KPK, Pakistan.

<sup>2</sup>. Post graduate resident DHQ hospital, Abbottabad, KPK, Pakistan.

<sup>3</sup>. Post graduate resident Ayub teaching hospital, Abbottabad, KPK, Pakistan.

<sup>4</sup>. Professor of medicine Ayub teaching hospital, Abbottabad, KPK, Pakistan

<sup>5</sup>. Post graduate resident urology Ayub teaching hospital, Abbottabad, KPK, Pakistan

\*Corresponding Author: Muhammad Mustafeez Waheed Jami, (mustafeezw@gmail.com)

## ABSTRACT

**Introduction:** Rheumatoid arthritis (RA) is a chronic autoimmune inflammatory disorder associated with significant physical disability, pain, fatigue, and psychosocial impairment, all of which adversely affect health-related quality of life (HRQoL). Local data regarding HRQoL among patients with RA in Khyber Pakhtunkhwa remain limited.

**Objective:** To assess health-related quality of life in patients with rheumatoid arthritis using the SF-36 questionnaire and to determine the association of demographic and clinical variables with HRQoL.

**Methods:** This cross-sectional study was conducted at the Medical B Unit of Ayub Teaching Hospital over a period of six months. A total of 60 adult patients diagnosed with rheumatoid arthritis according to the 2010 ACR/EULAR classification criteria were included through consecutive non-probability sampling. HRQoL was assessed using the Short Form-36 (SF-36) questionnaire. Quantitative variables were expressed as mean  $\pm$  standard deviation, while categorical variables were presented as frequencies and percentages. Associations between HRQoL categories and demographic or clinical variables were analyzed using the Chi-square test. A p-value of  $\leq 0.05$  was considered statistically significant.

**Results:** The mean age of participants was  $46.8 \pm 11.2$  years, and 76.7% were females. The majority of patients belonged to rural areas (61.7%), were married (81.7%), and had disease duration greater than 5 years (50.0%). The overall mean SF-36 score was  $43.5 \pm 12.9$ . The lowest mean domain scores were observed in bodily pain ( $34.7 \pm 17.3$ ), vitality ( $36.8 \pm 15.9$ ), and role limitation due to physical health ( $38.9 \pm 21.7$ ), while comparatively higher scores were observed in social functioning ( $52.4 \pm 18.6$ ) and mental health ( $50.8 \pm 16.7$ ). Poor HRQoL was identified in 60.0% of patients, moderate HRQoL in 28.3%, and good HRQoL in 11.7%, while none demonstrated excellent HRQoL. Female gender ( $p=0.012$ ), rural residence ( $p=0.031$ ), and lower educational status ( $p=0.008$ ) were significantly associated with poorer HRQoL. Among clinical variables, disease duration  $>5$  years ( $p=0.003$ ), morning stiffness  $\geq 1$  hour ( $p=0.019$ ), recent disease flare-ups ( $p=0.001$ ), and treatment with conventional DMARDs alone ( $p=0.041$ ) showed significant association with poor HRQoL. Physical health component scores ( $40.1 \pm 14.8$ ) were lower than mental health component scores ( $46.9 \pm 15.2$ ).

**Conclusion:** Patients with rheumatoid arthritis demonstrated substantial impairment in health-related quality of life, particularly in physical health domains. Poorer HRQoL was significantly associated with female gender, rural residence, lower educational status, prolonged disease duration, morning stiffness, and recent disease flare-ups. Routine assessment of HRQoL using SF-36 may help identify vulnerable patients and support more comprehensive patient-centered management strategies in resource-limited tertiary care settings.

**KEYWORDS:** Rheumatoid arthritis, Health-related quality of life, SF-36, Pakistan, Rheumatoid arthritis outcomes, Quality of life assessment.

## Introduction

Rheumatoid arthritis (RA) is a chronic, systemic autoimmune inflammatory disorder characterized predominantly by persistent synovitis, progressive joint destruction, and varying degrees of extra-articular involvement. Although the disease primarily affects synovial joints, its impact extends well beyond the musculoskeletal system and contributes substantially to long-term disability, impaired functional status, and reduced overall well-being. Persistent

inflammation in RA can result in cartilage destruction, bone erosions, tendon damage, and progressive deformities, ultimately affecting an individual's ability to perform routine daily activities independently.<sup>1</sup> The disease follows a fluctuating course with periods of remission and exacerbation, and despite advances in treatment, many patients continue to experience significant physical and psychosocial burden. Globally, RA affects approximately 0.5–1% of the adult population and is more commonly observed in women than men.<sup>2</sup> The disease may occur at any age; however, its peak onset is usually during the fourth and fifth decades of life, a period associated with maximum social and occupational productivity. In low- and middle-income countries such as Pakistan, the burden of chronic rheumatologic diseases is increasingly recognized, particularly due to delayed diagnosis, limited access to specialist care, financial constraints, and inconsistent long-term follow-up.<sup>3</sup> Local healthcare systems often remain focused on controlling disease activity and preventing structural damage, while broader patient-centered outcomes receive comparatively less attention. The clinical manifestations of RA frequently include chronic joint pain, morning stiffness, fatigue, swelling, and progressive limitation of mobility. Over time, these symptoms may compromise self-care, household responsibilities, employment, and social participation.<sup>4</sup> In addition to physical disability, RA has a considerable psychological impact. Depression, anxiety, sleep disturbance, and emotional distress are commonly reported among affected individuals and may further worsen disease perception and treatment adherence.<sup>5</sup> Chronic pain and fatigue often contribute to social withdrawal and reduced interpersonal functioning, leading to deterioration in emotional and social well-being. Consequently, the overall disease burden in RA cannot be adequately assessed through clinical or laboratory parameters alone. In recent years, increasing emphasis has been placed on the assessment of Health-Related Quality of Life (HRQoL) in chronic diseases, particularly in rheumatologic disorders. HRQoL refers to an individual's subjective perception of how their physical health, psychological state, social relationships, and functional abilities are affected by illness and its treatment.<sup>6</sup> In RA, HRQoL has emerged as an important outcome measure because disease activity scores and radiological findings may not fully reflect the patient's actual daily experience. Patients with apparently controlled disease may still report significant pain, fatigue, impaired mobility, and poor emotional health. Therefore, evaluation of HRQoL provides a more comprehensive understanding of disease burden and treatment effectiveness from the patient's perspective. Several instruments have been developed to assess HRQoL in chronic diseases, among which the Short Form-36 (SF-36) questionnaire is one of the most widely used and validated tools internationally.<sup>7</sup> The SF-36 evaluates eight health domains, including physical functioning, role limitation due to physical health, bodily pain, general health perception, vitality, social functioning, role limitation due to emotional problems, and mental health. Scores are standardized on a scale ranging from 0 to 100, with higher scores indicating better perceived health status. The questionnaire allows assessment of both physical and mental components of quality of life and has demonstrated good reliability and validity across diverse populations and disease conditions, including RA.<sup>8</sup> Its multidimensional nature makes it particularly useful in chronic inflammatory diseases where functional impairment and psychosocial distress coexist. A growing body of literature has shown that patients with RA consistently report poorer HRQoL compared with the general population. Matcham et al., in a systematic review, demonstrated significant impairment in both physical and mental health domains among RA patients assessed through SF-36.<sup>9</sup> Similarly, studies conducted in Asian populations have reported markedly reduced quality of life scores, particularly in areas related to pain, vitality, and physical functioning.<sup>10</sup> Fatigue has also been identified as one of the most disabling symptoms affecting HRQoL in RA patients and is closely associated with disease activity and chronic pain.<sup>11</sup> Furthermore, depression has been shown to independently predict poorer health outcomes and reduced quality of life in individuals with RA.<sup>12</sup> These findings highlight the multidimensional burden of the disease and the importance of integrating patient-reported outcomes into routine clinical assessment. Despite increasing international evidence regarding HRQoL in RA, local Pakistani data remain limited, especially from Khyber Pakhtunkhwa (KPK). Most available studies in Pakistan have primarily focused on disease activity, pharmacological management, or serological characteristics, while comparatively little attention has been given to the patient's functional, emotional, and social health status. In tertiary care hospitals serving large populations from both urban and rural areas, patients often present with advanced disease, prolonged symptom duration, and limited awareness regarding chronic disease management. Socioeconomic factors, literacy barriers, and restricted healthcare access may further influence quality of life outcomes in these patients. However, comprehensive evaluation of these dimensions using standardized tools such as SF-36 has not been adequately explored in the local setting. Assessment of HRQoL in patients with RA is clinically important because it may help identify areas of unmet need that are not apparent during routine clinical evaluation. Understanding the physical, emotional, and social challenges experienced by patients can support more holistic and patient-centered management strategies. Moreover, identification of demographic factors associated with poorer HRQoL may help clinicians recognize vulnerable patient groups requiring targeted interventions and psychosocial support.

In view of the limited local evidence and the significant impact of RA on multiple dimensions of health, the present study was conducted at a tertiary care hospital in Khyber Pakhtunkhwa to assess health-related quality of life in

patients with rheumatoid arthritis using the SF-36 questionnaire. The findings of this study may contribute to a better understanding of the broader disease burden in RA and help improve long-term patient care through incorporation of quality-of-life assessment into routine clinical practice.

### **Objectives**

1. To assess the health-related quality of life in patients with rheumatoid arthritis attending a tertiary care hospital in Khyber Pakhtunkhwa using the SF-36 questionnaire.
2. To evaluate the physical, mental, and social health domains of the SF-36 among patients with rheumatoid arthritis.
3. To determine the association between demographic and selected clinical variables and health-related quality of life in patients with rheumatoid arthritis.

## **METHODOLOGY**

### **Study Design and Setting**

This cross-sectional study was conducted at the Medical B Unit of Ayub Teaching Hospital, a tertiary care teaching hospital serving a large population from different districts of Khyber Pakhtunkhwa, Pakistan.

### **Study Duration**

The study was conducted over a period of six months from 15<sup>th</sup> august 2025 to 15<sup>th</sup> feb 2026, after approval of the research synopsis by the institutional ethical review committee and the College of Physicians and Surgeons Pakistan (CPSP).

### **Study Population**

The study included adult patients diagnosed with rheumatoid arthritis (RA) presenting to the inpatient and outpatient medical services during the study period.

### **Inclusion Criteria**

- Patients aged between 18 and 65 years of either gender
- Patients diagnosed with rheumatoid arthritis according to the 2010 American College of Rheumatology/European League Against Rheumatism (ACR/EULAR) classification criteria

### **Exclusion Criteria**

- Patients with other autoimmune diseases such as systemic lupus erythematosus or Sjögren syndrome
- Patients with known psychiatric illness or cognitive impairment
- Patients with major comorbid conditions significantly affecting quality of life, including advanced heart failure or malignancy

### **Sample Size**

A sample size of 60 participants was calculated using WHO sample size estimation software, taking a 95% confidence level and a margin of error of 7%, based on the standard deviation reported for the physical health component of the SF-36 questionnaire in previously published literature.

### **Sampling Technique**

A consecutive non-probability sampling technique was used.

### **Data Collection Procedure**

After obtaining informed written consent, data were collected using a structured predesigned proforma. Demographic information including age, gender, marital status, residence, educational status, occupation, and socioeconomic background was recorded. Clinical details including duration of rheumatoid arthritis, current treatment history, use of disease-modifying antirheumatic drugs (DMARDs) or biologic agents, comorbid conditions, and history of recent disease flare-ups were also documented. Health-related quality of life (HRQoL) was assessed using the Short Form-36 (SF-36) Health Survey questionnaire. The SF-36 is a validated instrument comprising eight domains: physical functioning, role limitation due to physical health, bodily pain, general health perception, vitality, social functioning, role limitation due to emotional problems, and mental health. Each domain was scored on a scale ranging from 0 to 100, with higher scores indicating better quality of life. For participants with limited literacy, the questionnaire was administered in an interviewer-assisted manner while maintaining confidentiality and neutrality. Scoring was performed according to standard SF-36 guidelines.

### **Outcome Measures**

An overall HRQoL score was calculated by averaging the scores of the eight SF-36 domains, with higher scores indicating better perceived quality of life.

Overall HRQoL scores were categorized for analytical purposes as follows:

- Poor quality of life: <50
- Moderate quality of life: 50–60
- Good quality of life: 61–80
- Excellent quality of life: >80

These categories were operationally defined based on overall SF-36 score distribution and previously used approaches in comparable quality-of-life studies.

**Statistical Analysis**

Data were analyzed using Statistical Package for Social Sciences (SPSS) version 27. Quantitative variables such as age, disease duration, and SF-36 domain scores were expressed as mean ± standard deviation. Categorical variables were presented as frequencies and percentages. Normality of quantitative variables was assessed using the Shapiro–Wilk test. Associations between HRQoL categories and demographic or clinical variables were analyzed using the Chi-square test where appropriate. Stratification was performed for variables including age, gender, disease duration, and treatment status. A p-value of ≤0.05 was considered statistically significant.

**Ethical Considerations**

Ethical approval was obtained from the institutional ethical review committee and CPSP prior to commencement of the study (*Approval code/Ref.NO-RC-EA-2025/163*). Written informed consent was obtained from all participants. Confidentiality of patient information was maintained throughout the study, and participation was entirely voluntary.

**RESULTS**

A total of 60 patients diagnosed with rheumatoid arthritis (RA) were included in the study. All participants completed the SF-36 questionnaire and were included in the final analysis. The majority of participants were female, belonged to rural areas, and had longstanding disease duration. Overall, reduced health-related quality of life (HRQoL) was observed across multiple SF-36 domains, particularly those related to physical functioning, bodily pain, and vitality.

**Demographic Characteristics of Study Participants**

The mean age of the study participants was 46.8 ± 11.2 years (range: 22–65 years). Most patients were females (76.7%), married (81.7%), and residents of rural areas (61.7%). Nearly half of the participants had no formal education, while the majority belonged to lower or lower-middle socioeconomic groups.

**Table 1: Demographic Characteristics of Study Participants (n = 60)**

Variable	Frequency (n)	Percentage (%)
<b>Age Group (years)</b>		
18–30	8	13.3
31–45	21	35.0
46–60	24	40.0
>60	7	11.7
<b>Gender</b>		
Male	14	23.3
Female	46	76.7
<b>Residence</b>		
Urban	23	38.3
Rural	37	61.7
<b>Marital Status</b>		
Married	49	81.7
Unmarried/Widowed	11	18.3
<b>Educational Status</b>		
No formal education	28	46.7
Primary to matric	19	31.7
Intermediate or above	13	21.6
<b>Employment Status</b>		
Employed	18	30.0
Unemployed/Housewife	42	70.0
<b>Socioeconomic Status</b>		

Variable	Frequency (n)	Percentage (%)
Low	31	51.7
Middle	24	40.0
High	5	8.3

The mean disease duration was  $6.9 \pm 4.3$  years. Most patients were receiving conventional disease-modifying antirheumatic drugs (DMARDs), while a smaller proportion were on biologic therapy. Morning stiffness lasting more than one hour and recent disease flare-ups were common findings.

**Table 2: Clinical Characteristics of Patients with Rheumatoid Arthritis (n = 60)**

Variable	Frequency (n)	Percentage (%)
<b>Disease Duration</b>		
<2 years	11	18.3
2–5 years	19	31.7
>5 years	30	50.0
<b>Morning Stiffness</b>		
<1 hour	17	28.3
$\geq 1$ hour	43	71.7
<b>Recent Disease Flare-up (last 6 months)</b>		
Yes	38	63.3
No	22	36.7
<b>Current Treatment</b>		
Conventional DMARDs only	44	73.3
DMARDs + Steroids	10	16.7
Biologic therapy	6	10.0
<b>Rheumatoid Factor Status</b>		
Positive	41	68.3
Negative	19	31.7
<b>Anti-CCP Status</b>		
Positive	37	61.7
Negative	23	38.3

The lowest mean scores were observed in bodily pain, vitality, and physical functioning domains, indicating significant impairment in physical health and energy levels. Comparatively higher scores were observed in social functioning and mental health domains, although these remained below optimal levels.

**Table 3: Mean SF-36 Domain Scores among Study Participants**

SF-36 Domain	Mean $\pm$ SD
Physical Functioning	41.6 $\pm$ 18.4
Role Limitation due to Physical Health	38.9 $\pm$ 21.7
Bodily Pain	34.7 $\pm$ 17.3
General Health Perception	45.2 $\pm$ 16.1
Vitality	36.8 $\pm$ 15.9

SF-36 Domain	Mean ± SD
Social Functioning	52.4 ± 18.6
Role Limitation due to Emotional Problems	47.5 ± 22.3
Mental Health	50.8 ± 16.7

The overall mean SF-36 score of the study population was  $43.5 \pm 12.9$ , reflecting impaired health-related quality of life among patients with rheumatoid arthritis. Based on overall SF-36 scores, the majority of patients had poor to moderate quality of life. Only a small proportion demonstrated good HRQoL, while none of the participants achieved scores consistent with excellent quality of life.

**Table 4: Distribution of Overall HRQoL Categories (n = 60)**

HRQoL Category	Frequency (n)	Percentage (%)
Poor (<50)	36	60.0
Moderate (50–60)	17	28.3
Good (61–80)	7	11.7
Excellent (>80)	0	0

Poor HRQoL was significantly more common among female participants, patients from rural areas, and those with lower educational status. No statistically significant association was observed between age group and HRQoL category.

**Table 5: Association between HRQoL Categories and Demographic Variables**

Variable	Poor HRQoL n (%)	Moderate/Good HRQoL n (%)	p-value
<b>Gender</b>			
Male (n=14)	5 (35.7)	9 (64.3)	0.012
Female (n=46)	31 (67.4)	15 (32.6)	
<b>Residence</b>			
Urban (n=23)	10 (43.5)	13 (56.5)	0.031
Rural (n=37)	26 (70.3)	11 (29.7)	
<b>Educational Status</b>			
No formal education	22 (78.6)	6 (21.4)	0.008
Educated	14 (43.8)	18 (56.2)	
<b>Age Group</b>			
≤45 years	15 (51.7)	14 (48.3)	0.284
>45 years	21 (67.7)	10 (32.3)	

Patients with longer disease duration, frequent flare-ups, and prolonged morning stiffness had significantly poorer HRQoL scores. Patients receiving biologic therapy demonstrated relatively better quality of life compared to those receiving conventional treatment alone.

**Table 6: Association between HRQoL and Clinical Characteristics**

Variable	Poor HRQoL n (%)	Moderate/Good HRQoL n (%)	p-value
<b>Disease Duration</b>			
≤5 years	12 (40.0)	18 (60.0)	0.003
>5 years	24 (80.0)	6 (20.0)	
<b>Morning Stiffness</b>			
<1 hour	6 (35.3)	11 (64.7)	0.019

Variable	Poor HRQoL n (%)	Moderate/Good HRQoL n (%)	p-value
≥1 hour	30 (69.8)	13 (30.2)	
<b>Recent Flare-up</b>			
Yes	29 (76.3)	9 (23.7)	0.001
No	7 (31.8)	15 (68.2)	
<b>Treatment Type</b>			
Conventional DMARDs	30 (68.2)	14 (31.8)	0.041
Biologic therapy	1 (16.7)	5 (83.3)	

For inferential analysis, patients receiving DMARDs with corticosteroids were included within the conventional treatment group because of the small subgroup size.

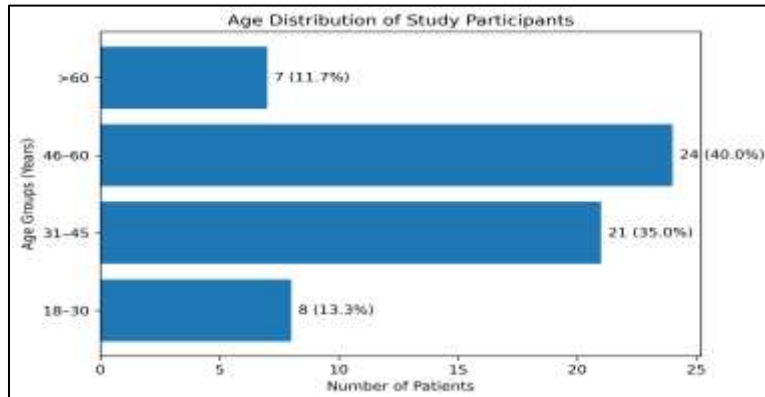
The physical health component scores were lower than mental health component scores, indicating greater impairment in physical dimensions of health among RA patients.

**Table 7: Comparison of Physical and Mental Health Component Scores**

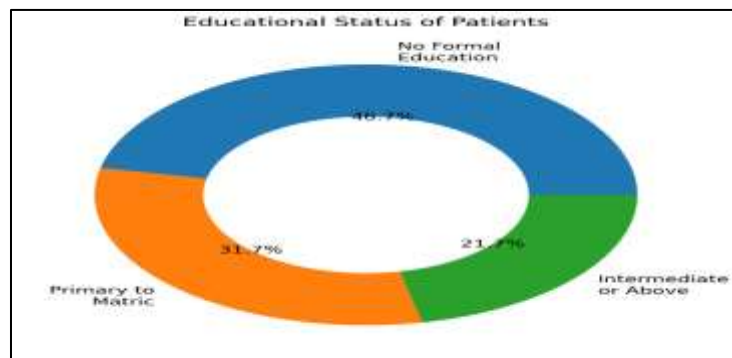
Component	Mean ± SD
Physical Health Component Score	40.1 ± 14.8
Mental Health Component Score	46.9 ± 15.2

Overall, the findings of this study demonstrated substantial impairment in health-related quality of life among patients with rheumatoid arthritis, particularly in physical health domains. Female gender, rural residence, lower educational status, longer disease duration, and recent disease flare-ups were significantly associated with poorer HRQoL outcomes.

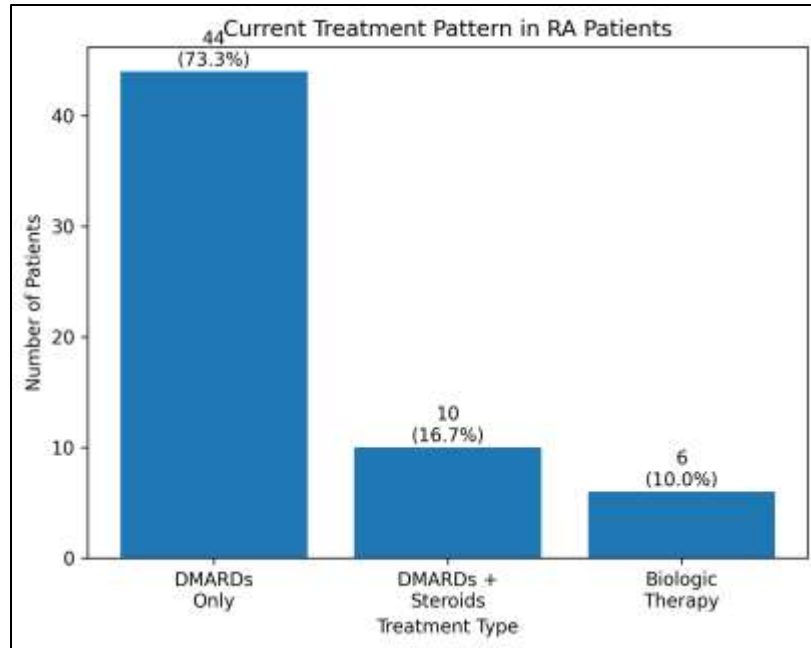
**Pictorial Representation of Results**



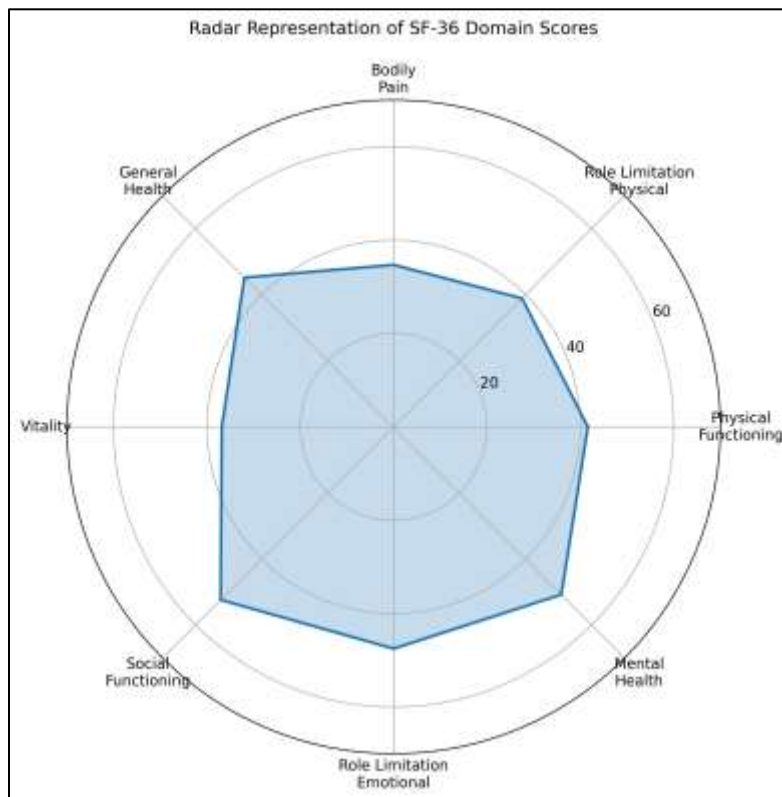
**Figure 1: Age distribution of study participants.**



**Figure 2: Educational status of patients with rheumatoid arthritis.**



**Figure 3: Current treatment pattern among study participants.**



**Figure 4: Radar representation of SF-36 domain scores.**

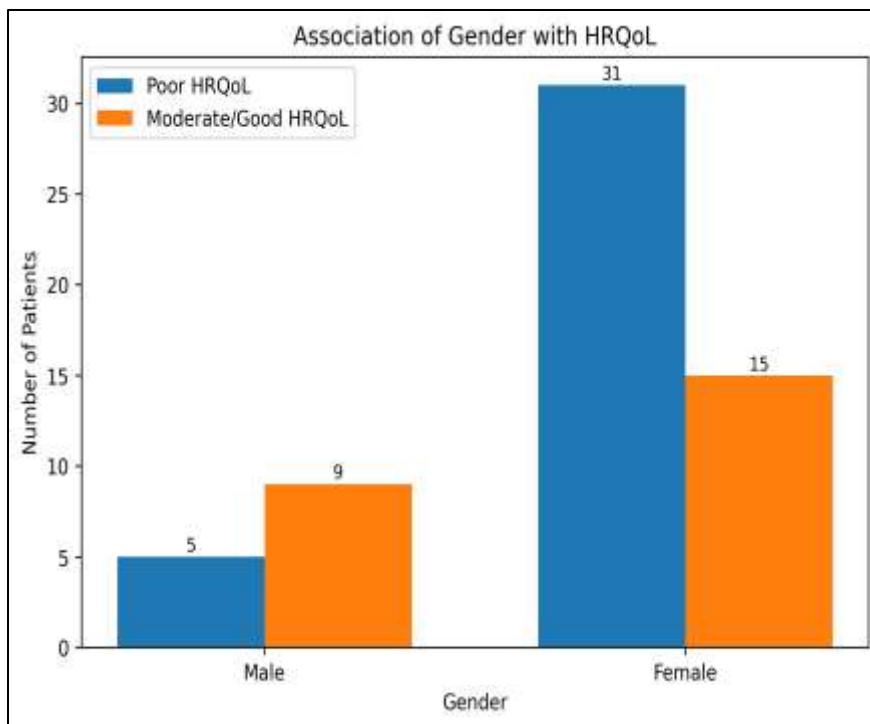


Figure 5: Association of gender with health-related quality of life.

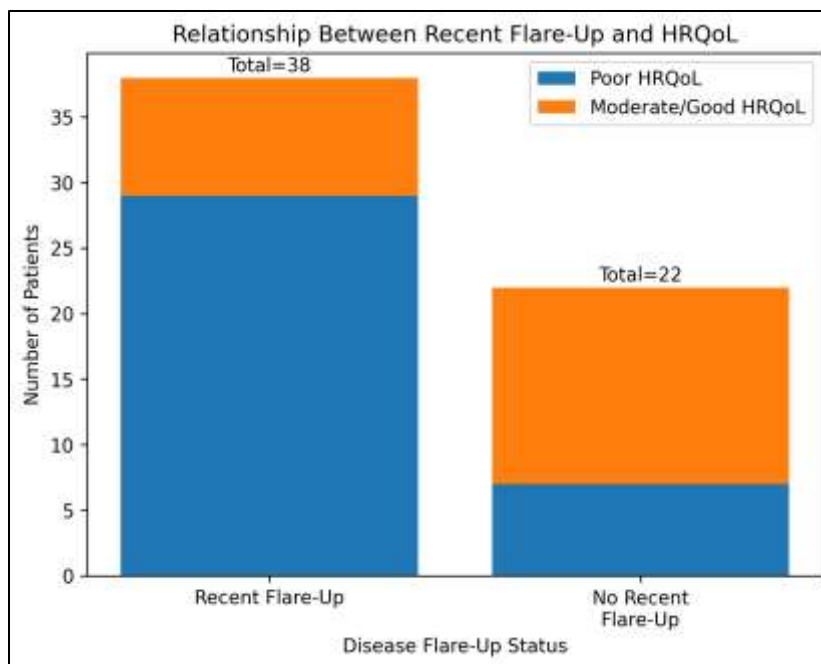


Figure 6: Relationship between recent disease flare-up and HRQoL categories.

## DISCUSSION

This study evaluated health-related quality of life (HRQoL) in patients with rheumatoid arthritis (RA) using the SF-36 questionnaire at a tertiary care hospital in Khyber Pakhtunkhwa, Pakistan. The findings demonstrated a substantial impairment in overall quality of life among patients with RA, with the greatest reduction observed in physical health domains, particularly bodily pain, physical functioning, vitality, and role limitation due to physical health. In addition,

poorer HRQoL was significantly associated with female gender, rural residence, lower educational status, prolonged disease duration, morning stiffness, and recent disease flare-ups.

In the current study, the mean overall SF-36 score was  $43.5 \pm 12.9$ , indicating marked impairment in quality of life among the study population. These findings are comparable to the study conducted by Rahman MM et al., titled “*Quality of Life Assessment by SF-36 among the Patients with Rheumatoid Arthritis*,” in which significantly reduced physical and mental health scores were also reported among RA patients.<sup>1</sup> Similarly, the systematic review by Matcham F et al., “*The Impact of Rheumatoid Arthritis on Quality of Life Assessed Using the SF-36*,” demonstrated that patients with RA consistently experience impaired HRQoL across multiple domains compared to healthy populations.<sup>2</sup> The consistency between these findings and the present study further highlights the profound multidimensional burden associated with rheumatoid arthritis.

Physical health domains were more severely affected than mental health domains in our patients, with bodily pain showing the lowest mean score. Chronic pain remains one of the most disabling manifestations of RA and directly contributes to impaired mobility, reduced work capacity, sleep disturbance, and dependency in daily activities. Persistent synovial inflammation, joint stiffness, and structural joint damage likely explain the lower physical functioning scores observed in this study. Similar findings were reported by Salaffi F et al. in their study evaluating HRQoL in rheumatologic diseases, where physical functioning and pain-related domains were significantly compromised in RA patients.<sup>3</sup> The lower vitality scores observed in our study may additionally reflect chronic fatigue, inflammatory burden, and psychological distress commonly associated with longstanding disease.

The majority of patients in this study were females, and female gender was significantly associated with poorer HRQoL outcomes. This observation is consistent with the known epidemiological pattern of RA, which predominantly affects women and often demonstrates greater functional disability and pain perception among female patients. The study by Kozłowska KA et al., “*The Link between Demographic and Clinical Factors and Fatigue Symptoms among Rheumatoid Arthritis Patients*,” also identified female gender and fatigue-related symptoms as important contributors to reduced quality of life.<sup>4</sup> In the local sociocultural context, women frequently face additional barriers including delayed healthcare access, dependency on family support, and increased household responsibilities despite physical limitations, which may further worsen perceived quality of life.

Another important finding of the present study was the significant association between rural residence and poorer HRQoL. Patients from rural areas demonstrated substantially lower quality of life scores compared with urban residents. This may be attributable to limited healthcare accessibility, delayed rheumatology consultation, lower health literacy, transportation difficulties, and financial constraints commonly encountered in rural settings of Khyber Pakhtunkhwa. Furthermore, lower educational status was significantly associated with poorer HRQoL in our study. Education may influence disease awareness, treatment adherence, understanding of long-term disease management, and timely healthcare-seeking behavior. These findings emphasize the impact of socioeconomic determinants on disease outcomes beyond clinical disease activity alone.

Clinical characteristics also demonstrated a strong relationship with HRQoL. Patients with disease duration greater than five years had significantly poorer quality of life scores compared to those with shorter disease duration. Progressive joint destruction, irreversible deformities, chronic pain, and cumulative functional disability associated with longstanding disease may explain this association. Similar observations were reported by Rosa-Gonçalves D et al. in their study “*Quality of Life and Functional Capacity in Patients with Rheumatoid Arthritis*,” where prolonged disease duration correlated with worsening physical function and overall quality of life.<sup>5</sup>

Morning stiffness and recent disease flare-ups were also significantly associated with poorer HRQoL in the present study. These findings are clinically expected, as active inflammation and uncontrolled disease activity directly impair physical functioning and daily productivity. Patients experiencing recurrent flare-ups often report increased pain, fatigue, emotional stress, and reduced independence. The systematic review by Zhang L et al., “*Depression Has an Impact on Disease Activity and Health-Related Quality of Life in Rheumatoid Arthritis*,” highlighted that increased disease activity is closely linked with poorer physical and mental health outcomes.<sup>6</sup>

Interestingly, patients receiving biologic therapy demonstrated relatively better HRQoL compared with those receiving conventional DMARD therapy alone. Although only a small proportion of patients in our study were receiving biologic agents, this association may suggest better perceived disease control among patients treated with biologic therapy. However, interpretation of this finding should be made cautiously due to the small number of patients receiving biologics and the cross-sectional nature of the study. The relatively limited use of biologic therapy in our cohort likely reflects financial constraints and restricted accessibility within public sector healthcare settings in Pakistan.

The present study has important clinical implications. Assessment of HRQoL using validated tools such as SF-36 provides valuable insight into the broader disease burden experienced by patients with RA and highlights aspects that may not be adequately captured through laboratory parameters or disease activity scores alone. Incorporating routine

HRQoL assessment into clinical practice may help clinicians identify vulnerable patients requiring multidisciplinary support, including physiotherapy, pain management, psychological counseling, and social support interventions. In resource-limited settings such as Pakistan, greater emphasis on patient-centered outcomes may contribute to improved long-term disease management and treatment satisfaction.

### **Strengths and Limitations**

This study has several strengths. It provides local data regarding HRQoL among patients with RA from a tertiary care hospital in Khyber Pakhtunkhwa, where such evidence remains limited. The use of the SF-36 questionnaire allowed comprehensive evaluation of both physical and mental health domains. In addition, inclusion of demographic and clinical associations provided a broader understanding of factors influencing quality of life in this population.

However, certain limitations should also be acknowledged. The study was conducted at a single tertiary care center with a relatively small sample size, which may limit generalizability of the findings to the wider population. The cross-sectional design also limits assessment of causal relationships and temporal changes in HRQoL over time. Furthermore, disease activity indices such as DAS-28 were not formally incorporated into the analysis, which could have provided additional correlation between clinical disease severity and quality of life outcomes. Despite these limitations, the study offers valuable baseline data from an underrepresented region and highlights the significant burden of RA on patient well-being.

### **CONCLUSION**

Rheumatoid arthritis was associated with considerable impairment in health-related quality of life among the patients included in this study, with the greatest effect observed in physical health domains such as bodily pain, physical functioning, and vitality. Patients with longer disease duration, recurrent flare-ups, rural background, and lower educational status were more likely to have poorer HRQoL scores. Although advances in treatment have improved disease control in many patients, the findings of this study suggest that the overall burden of rheumatoid arthritis in our setting extends beyond joint inflammation alone and significantly affects daily functioning, emotional well-being, and social life. Assessment of quality of life using tools such as SF-36 can provide valuable additional information alongside routine clinical evaluation and may help identify patients requiring more comprehensive support. Greater attention to patient-centered care, early disease control, regular follow-up, rehabilitation, and psychosocial support may contribute to improved long-term outcomes in patients with rheumatoid arthritis, particularly in resource-limited tertiary care settings of Pakistan.

### **Additional information**

**Conflicts of Interest:** None

**Payment/Services Information:** All authors state that no financial assistance or support was received from any organization in relation to this submitted work.

**Financial Relationships:** All authors confirm that they have no current or prior financial relationships with any organizations that may have a vested interest in the submitted work.

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### **Authors Contribution**

**Concept & Design of Study;** Shahzada Alam Zeb <sup>1</sup>

**Data collection, Analysis & drafting-** Shahzada Alam Zeb <sup>1</sup>, Muhammad Mustafeez Waheed Jami <sup>2</sup>, Aamir Rashid Khattak <sup>3</sup>, Haris Khan<sup>5</sup>

**Critical Review & Final Approval;** Shakeel Ahmed Jadoon<sup>4</sup>

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