

Quality of Life for Patients with Rheumatoid Arthritis

Anood Abdullellah Alhawsawi¹, Fatemah Maroof Mohammad Alomary², Aysha Mohd Said Alomari³, Hussam Faez M Alassmari⁴, Shaza Salem Allhyani⁵, Nouf Mahdi Ayes Al Motery⁶, Ahlam Rasheed Khalaf Alanazi⁷, Ibrahim Obaid Matar Alotaibi⁸, Fahd Saeed Mohammad Alqahtani⁹, Nujood Ghazi Marzouk Al-Shaibani¹⁰, Reem Ahmed Faraj Dardom¹¹, Maryam Mohammed Rasheed Alkhaibary¹²

Abstract

Background: Rheumatoid arthritis is a systemic, autoimmune and inflammatory disease that is associated with progressive joint degeneration and limitation of physical activity. Aim of this study: To assess quality of life for patients with rheumatoid arthritis. Design: A descriptive exploratory study design was used. Setting: This study was conducted at Makkah Hospital in outpatient clinics and rehabilitation unit/Makkah, Saudi Arabia. Sample: A purposive sample of 100 patients with rheumatoid arthritis. Tool: patient interview questionnaire, Health Assessment Questionnaire Disability Index, Hamilton Anxiety Scale, Zung Self Rating Depression Scale and Arthritis Impact Measurement Scale. Results: Two thirds of patients had poor quality of life and near one third of them had fair quality of life, also quarter of the studied patients had much disability. Also the majority of them had mild anxiety. While less than quarter had mild depression and the minority were severely depressed. Conclusion: There was a negative correlation between both of disability, depression and anxiety and quality of life. Recommendations: Provide an educational program for patients how to deal with disease for improving their quality of life.

Key words: quality of life, Rheumatoid arthritis.

Introduction

Rheumatoid arthritis is a chronic autoimmune disease of unknown etiology that affects the connective tissue in synovial joints, muscle, tendons, and fibrous tissue. It is the most common form of chronic inflammatory arthritis characterized by a symmetric peripheral polyarthritis and often results in cartilage destruction and functional disability. As a systemic disease, RA may result in a variety of extra articular manifestations, including

¹ Specialist Nursing, PHC Alhendawia, Saudi Arabia.

² Midwife, PHC-Alzima, Saudi Arabia.

³ Nursing technician, Makhwah1 Primary Health Care Center, Saudi Arabia.

⁴ Nursing Technician, Makkah, Al-Aziziah Health Care Center, Saudi Arabia.

⁵ Specialist Nursing, Aljamom PHC, Saudi Arabia.

⁶ Nursing technician, PHC Barzan, Saudi Arabia.

⁷ Senior Nurse Specialist, Riyadh Third Healthcare Cluster, Saudi Arabia.

⁸ Nurse specialist, Al-hariq General Hospital, Saudi Arabia.

⁹ Nursing technician, Durma General Hospital, Saudi Arabia.

¹⁰ Nursing technician, Durma General Hospital, Saudi Arabia.

¹¹ Nursing technician, Durma General Hospital, Saudi Arabia.

¹² Nursing specialist, Madina general hospital (King Salman Medical City), Saudi Arabia.

fatigue, subcutaneous nodules, lung involvement, pericarditis, peripheral neuropathy, vasculitis and hematologic abnormalities (Akram et al., 2021).

The exact cause of RA is unknown; however, initiation of disease seems to result from an interaction among genetic susceptibility, environmental triggers, and chance. Rheumatoid arthritis is characterized by dysregulated inflammatory processes in the synovium of the joint that eventually leads to the destruction of both cartilaginous and bony elements of the joint with resulting pain and disability. Systemic inflammation associated with RA is associated with a variety of extra-articular comorbidities, including cardiovascular disease, resulting in increased mortality in patients with rheumatoid arthritis. Rheumatoid arthritis is also associated with several psychosocial disorders (Scherer et al., 2020).

World Health Organization (WHO) defines quality of life as the individual's perception of their position in life regarding culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns. It is a wide concept that includes physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment (Suh et al., 2022).

Rheumatoid arthritis is a common progressive inflammatory condition affecting 1% of the population. It causes damage to the synovial joints but also has several systemic manifestations and sequelae of disease. It may affect several organ systems, including cardiac, pulmonary, ocular, skin, and hematologic, thereby increasing the risk of multiple associated complications. Rheumatoid arthritis is associated with poor physical function, worsening quality of life, limitation in work activity, restriction in social participation and increased morbidity and mortality, especially due to cardiovascular disease complications. They cause considerable physical, psychological, social and economic impacts (Fatima et al., 2021).

Nursing care is important and effective in rheumatoid arthritis management. In addition, it positively affects the social, physiological, and psychosocial processes of the patients, thereby increasing their quality of life and functional status. Nursing care improves the quality of life and functional status of patients with rheumatoid arthritis by regulating many factors, such as fatigue, pain, infection rates and length of hospital stay. Nurses play an important role in analyzing the strengths of patients with rheumatoid arthritis, improving their quality of life, assessing their needs and providing evidence-based nursing interventions (Sezgin & Bektas, 2022).

Significance of the study:

The worldwide prevalence of RA is 0.4 to 1.3% and is considered one of the 50 most common diseases that contribute to global disability. According to a meta-analysis, RA may be affecting more than 1.3 million people in the United States and 15 million people worldwide. The prevalence is higher in women compared to men (3:1) (Espinoza et al., 2021).

Rheumatoid arthritis has considerable physical, psychological, social, and economic impacts. This directly affects functionality, that is, the capacity that the individual has to effectively and independently perform activities and tasks of daily living and their quality of life. Patients with compromised functionality are less likely to work, perform daily activities, and engage in leisure activities (Pianarosa et al., 2022). Rheumatoid arthritis is also associated with multiple serious and potentially life-threatening extra articular manifestations that can also contribute to the physical disability and psychological morbidity of RA that lead to reduced quality of life, higher direct and indirect costs, and societal burden of the disease (Garland & Falk 2022).

Aim of the study:

This study aimed to assess quality of life for patients with rheumatoid arthritis.

Research question

- What is the quality of life for patients with rheumatoid arthritis?

Subjects and methods

Design:

A descriptive exploratory study was utilized to answer the research question.

Setting

This study was conducted at Makkah Hospital in outpatient clinics and rehabilitation unit.

Subjects:

A purposive sample of 100 patients with rheumatoid arthritis was recruited in this study. They were 70 females and 30 males.

Sample size:

A sample size of 100 patients with rheumatoid arthritis was selected to achieve 80% power analysis to detect a mean of period differences of 0.7 with an estimated standard deviation of differences of 3.0 (Hoglund et al., 2011) and a significance level (alpha) of 0.05 using two-sided Wilcoxon test assuming that the actual distribution is uniform (Hintze, 2011).

$$X = Z_{(c)} \sqrt{100} \sqrt{r(100-r)}$$

$$N = \frac{X^2}{E} \left(\frac{N-1}{E} + 1 \right)$$

$$E = \sqrt{\frac{(N-1)}{n} \left(\frac{N-1}{n} \right)}$$

Where N is the population size, r is the fraction of responses that interested in, and $Z_{(c)}$ is the critical value for the confidence level (Chow et al., 2007).

Type I error with significant level (α) = 0.05

Type II error with significant level ($1 - \beta$) = 90%

Inclusion criteria:

Subjects should fulfill the following:

- Adult patients from both genders ≥ 18 years old
- Patients free from mental disorders (dementia, delirium)
- Patients who are accepted to participate in this study.

Exclusion criteria:

- Bedridden patients.
- Presence of significant comorbidity such as malignancies or end stage organ disease.
- Other rheumatic diseases.

Tool of data collection and techniques

Data were collected using the following

tools:

Tool I: Patient's interview questionnaire:

This tool adapted from (Mohamed, (2021)) and modified by the investigator after reviewing the related literature (Gomaa, 2019 & Seyam, 2018). It included two parts:

First part was concerned with patients' socio- demographic characteristics as age, gender, and marital status, level of education, occupation, residence, income and housing conditions.

Second part was concerned with patients' clinical data, present and past medical history; and family history.

Tool II: Health Assessment Questionnaire Disability Index (HAQ-DI):

This tool was adapted from James, (1978) and was translated into Arabic language and back translation was done. It used to assess the disability for patients with rheumatoid arthritis. It included positive twenty statements that categorized into eight sections which included dressing and grooming (2 items), arising (2 items), eating (3 items), walking (2 items), hygiene (3 items), reach (2 items), grip (3 items) and common daily activities (3 items).

❖ Scoring system:

The patients are asked about the degree of difficulty they have in performing these activities. The answers were on a scale ranging from 0 to 3 where if the activity can be performed without any difficulty (score 0), some disability (score 1), much disability (score 2) and unable to perform (score 3). Total score was 60, the higher score indicate more difficulty in performing the activity, it was categorized as follows:

- No disability < 25 %
- Some disability $\geq 25\%$ - < 50%
- Much disability $\geq 50\%$ - < 75%
- Unable to perform $\geq 75\%$

Tool III: Hamilton Anxiety Scale (HAM-A):

This scale was adapted from Hamilton (1959). It was translated into Arabic language and back translation was done and consisted of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety).

❖ Scoring system:

Each item is scored on a scale of 0 =not present 1=mild 2=moderate 3=severe, 4= very severe, with a total score range of 0–56, it was categorized as follows:

- Mild anxiety <17
- Moderate anxiety 18-24
- Severe anxiety ≥ 25 -30

Tool (IV): Zung Self-Rating Depression Scale (ZSDS):

This scale was adapted from (Zung, 1965). It was used to assess level of depression for patients under study. This scale was translated into Arabic then back translation into English was done to assure its accuracy. It was consisted of 20 statements; each statement is scored on a scale of 1- 4. There are nine positively worded statements (2, 6, 11, 12, 14, 16, 17, 18, 20) and eleven negatively worded statements (1, 3, 4, 5, 7, 8, 9, 10, 13, 15, 19).

❖ Scoring system:

Total score was 25-100, it was considered that the lower the score the better psychological status, it was categorized as follows:

- 25-49 Normal Range

- 50-59 Mildly Depressed
- 60-69 Moderately Depressed
- 70 and above Severely Depressed

Tool V: Arthritis Impact Measurement Scale 2 (AIMS 2):

This tool was adapted from (Robert et al., 1992). It was translated into Arabic and back translation was done. It used to assess quality of life (QoL) for patients under study within the last month. It included 56 questions distributed as follows: mobility level (5 items), walking and bending (5 items), hand and finger function (5 items), arm function (5 items), self-care tasks (4 items), household tasks (4 items), social activity (5 items), support from family and friends (4 items), arthritis pain (5 items), work (4 items), level of tension (5 items) and mood (5 items). There are 30 positive questions (1-3, 11-20, 25-37, 49-52) and 26 negative

questions (4-10, 21-24, 38-48, 53-56).

❖ Scoring system:

Each question has five responses ranging from 1-5. The total score of total QOL and its dimensions were calculated considering the number of the questions in each dimension and the patients' responses. Total score was 280, it was considered that the higher the score the better quality of life, it was categorized as follows:

- Poor quality of life < 50 %
- Fair quality of life 50% - < 75%
- Good quality of life \geq 75%

Validity and reliability:

☐ Testing validity: Content validity was conducted to determine whether the tool covers the aim.

☐ Testing reliability

It was tested statistically to assure that the tool is reliable before data collection. Testing the reliability of the same tool was done by using Alpha Cronbach's Test. Alpha Cronbach's model which is a model of internal consistency was used in the analysis of Rheumatoid Arthritis Patient's interviewing Questionnaire, Health Assessment Questionnaire Disability Index, Hamilton Anxiety Scale, Zung Self-Rating Depression Scale and Arthritis Impact Measurement Scale were (0.712, 0.819, 0.782, 0.810 and 0.810). Statistical equation of Cronbach's Alpha reliability coefficient normally ranges between 0 and 1. Higher values (more than 0.7) denote acceptable reliability.

Pilot Study

A pilot study was carried out on 10% of total sample (100) (10 patients) to evaluate the applicability, clarity, feasibility and efficiency of the tools, determine the time required to fill the tool of data collection. Pilot study also aimed to find the possible obstacles and problems that might face researcher and interfere data collection. The necessary modification was done according to the result of the pilot study and subjects included in the pilot study were excluded from study sample.

Field work

The aim of the study was explained and simplified to the patients who agreed to participate in the study prior data collection. The actual work of this study took about 3 months started from the beginning of January 2022 until the end of March 2022.

II. Administrative design

An official permission was issued

Ethical consideration:

An ethical approval obtained

III. Statistical design

All Data were collected, tabulated and subjected to statistical analysis. Statistical analysis was performed with SPSS® Statistics Version 20 for Windows. Quantitative measured variables are described by the Mean, Standard Deviation (SD), while Qualitative categorical variables are described by frequency and Percentages. All quantitative scales are normalized on 100 point scale from 0 to 100. Independent samples t test is used for comparing two groups means. Pearson correlation coefficient is applied for correlation analysis of continuous variables. Chi-squared test of independence is applied for categorical variables in contingency tables. Gamma coefficient is used as a measure of association for ordinal by ordinal contingency tables.

Results:

Table (1): shows that 36% of patients were aged 40-60 years old and 37% of patients were aged 60 years old or more and the mean of their age was 49.9 ± 15.1 . Regarding gender and marital status, 70% of them were female and 72% were married. Also 73% of patients cannot read and write, 86% of patients did not have work and 86% lived in rural areas.

Patients' demographic characteristics	Frequency (N)	Percent (%)
Age		
Less than 40 years	27	27%
40 to less than 60 years	36	36%
60 years or more	37	37%
Mean \pm SD 49.9 ± 15.1		
Gender		
Male	30	30%
Female	70	70%
Marital status		
Single	28	28%
Married	72	72%
Education level		
Can't read & write	73	73%
Secondary education	25	25%
High education	2	2%
Occupation:		
Work that requires mental effort	9	9%
Work that requires physical effort	4	4%
Work that requires mental and physical effort	1	1%

Does not work	86	86%
Residence		
Urban	14	14%
Rural	86	86%

Table (2): shows that 29% of the studied patients had some disability regarding dressing and grooming and hygiene. Also 34% and 35 % of them had some disability regarding grip and eating respectively. Moreover, 29% of them had much disability regarding walking and grip and 31% of them had much disability regarding dressing and grooming. While 34% of them were unable to perform activities, 11% of them were unable to perform arising and eating and 12% were unable to walk and reach

Items	No disability		Some disability		Much disability		Unable to perform	
	N	%	N	%	N	%	N	%
Dressing and grooming	33	33%	29	29%	31	31%	7	7%
Arising	50	50%	19	19%	20	20%	11	11%
Eating	34	34%	35	35%	20	20%	11	11%
Walking	36	36%	23	23%	29	29%	12	12%
Hygiene	34	34%	29	29%	27	27%	10	10%
Reach	34	34%	31	31%	23	23%	12	12%
Grip	28	28%	34	34%	29	29%	9	9%
Activities	34	34%	16	16%	16	16%	34	34%

Table (3) shows that 83% of patients had mild anxiety, 16% had moderate anxiety and only 1% of them had severe anxiety.

level of anxiety	Frequency (N)	Percent (%)
Mild anxiety	83	83%
Moderate anxiety	16	16%
Severe anxiety	1	1%

Table (4): Shows that 65% of patients were not depressed, 22% of them were mildly depressed, 11% were moderately depressed and 2% of patients were severely depressed.

Level of depression	Frequency (N)	Percent (%)
Normal range	65	65%
Mildly depressed	22	22%
Moderately depressed	11	11%
Severely depressed	2	2%

Table (5): shows that 99% of the studied patients had poor quality of life regarding arthritis pain and work, 91% regarding support from family and friends, 86% regarding level of tension, 71% regarding mood, 67% regarding arm function, 63% regarding hand and finger function, 61% regarding self-care tasks, 45% regarding walking and bending and mobility level. Moreover 33% of patients had average quality of life regarding walking and bending, 31% regarding social activity, 29% regarding self-care tasks and mood, 28% regarding mobility level and 25% regarding arm function.

Patients' quality of life	Poor		Average		Good	
	N	%	N	%	N	%
Mobility level	45	45%	28	28%	27	27%
Walking and bending	45	45%	33	33%	22	22%
Hand and finger function	63	63%	4	4%	33	33%
Arm function	67	67%	25	25%	8	8%
Self-care tasks	61	61%	29	29%	10	10%
House hold tasks	47	47%	13	13%	40	40%
Social activity	52	52%	31	31%	17	17%
Support from family and friends	91	91%	9	9%	0	0%
Arthritis pain	99	99%	1	1%	0	0%
Work	99%	99%	1	1%	0	0%
Level of tension	86	86%	14	14%	0	0%
Mood	71	71%	29	29%	0	0%

Table (6): shows that there are three negative correlations between disability and quality of life, Anxiety and depression and quality of life. And three positive correlations between disability and anxiety, disability and depression and anxiety and depression.

Items	(Disability)	(Anxiety)	(Depression)	(Quality of life)
	P	P	P	P
Disability	1			-.897** .000
Anxiety	-.704** .000	1		-.704** .000
depression	.523** .000	.693** .000	1	-.656** .000
Quality of life	-.897 .000	-.704** .000	-.515** .000	1

Figure (1): shows that 38% of total disability index of the studied sample had no disability, 29% had some disability, 24% had much disability and 9% were unable to perform activities.

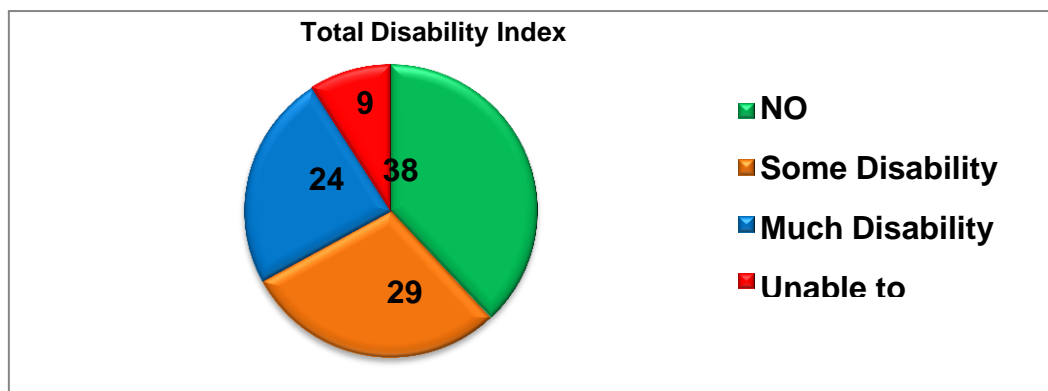
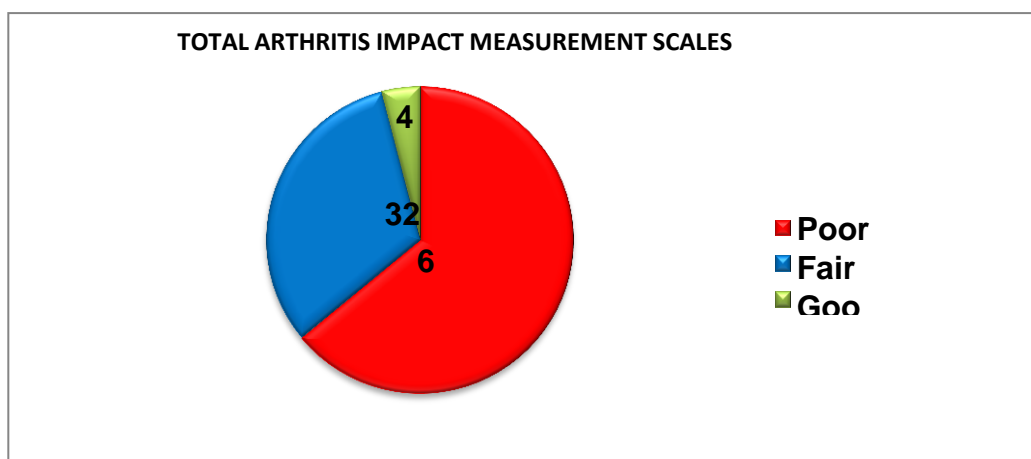


Figure (2): shows that 64% of the studied sample had poor quality of life, 32% had average quality of life and 4% had good quality of life.



Discussion:

Regarding the gender of the studied patients, the finding of the current study revealed that, three quarters of patients under the study were females with a ratio of 3 female: 1 male, this result might be due to the effect of endogenous sex hormones, which have complex effects on the immune system and make gender-based differences in the course and outcomes of RA. These results similar with the result of study performed by Mohamed et al. (2021) entitled "Factors affecting self-management of patients with rheumatoid arthritis", which found that around three quarters of the studied patients were females.

In the same field, the study performed by Shao et al. (2021) which entitled "Effectiveness of a self-management program for joint protection and physical activity in patients with rheumatoid arthritis: A randomized controlled trial" which found that more than three quarters of the studied patients 86% were females with a female: male ratio of 5.2:1. While this result contraindicates a study performed by Baday-Keskin & Ekinici (2022) "The relationship between kinesiophobia and health-related quality of life in patients with rheumatoid arthritis: A controlled cross-sectional study" who found that around two thirds of patients were females with a female: male ratio of 2:1.

Related to age, the results revealed that about two thirds of the studied patients were aged from 50-70 years with the mean age was 49.9 ± 15.1 , this may be due to age group considered high risk for exposure to rheumatoid arthritis as the risk of rheumatoid arthritis increases with age where there are many changes that occur within the musculoskeletal

system as cartilage breaks down and joints may become inflamed and painful.

The present study similar with the result of study performed by Al-Jabi et al. (2021) entitled " Impact of socio-demographic and clinical characteristics on functional disability and health-related quality of life in patients with rheumatoid arthritis: a cross-sectional study from Palestine" who stated that about two thirds of the studied sample their mean age was $49. \pm 13.1$ years. And the study performed by Tański et al. (2022) entitled " Sexual Dysfunction and Quality of Life in Patients with Rheumatoid Arthritis" which found that the mean age of patients was 48.3 ± 14.6 years.

Regarding the assessment of disability, the current study revealed that, one third of the studied patients was unable to perform activities, followed by walking, followed by reach, followed by arising, followed by eating, followed by hygiene, followed by grip, followed by dressing and grooming. These results are approximately similar to the study performed by Zou et al. (2022) which entitled " The characteristics and associated factors of functional limitation in patients with rheumatoid arthritis", who stated that The most restricted activity was walking, followed by gripping, reaching, daily activities, hygiene, dressing and grooming and arising, and the last eating.

In the same field, these results disagree with the study performed by Ahmed & Ameen. (2021), which entitled " Activities of daily living and quality of life in patients with rheumatoid arthritis", who, found that RA more affected patients grip, reaching was second affected activity Walking and hygiene were less affected subscale. These limitations in RA were most strongly related to the involvement of the joints. The most common joints involved are toe, shoulder, wrists, knees, fingers and elbows, additionally it also results in feet and hand deformity. This deformity may lead to limitation in joint movement, impairment in ADLs due to pain, decreased flexion at the shoulder, reduction in grip strength and causes the significant effect on clothing.

Regarding anxiety level, the results of this study revealed that, the majority of the studied patients had mild anxiety and less than one fifth had moderate anxiety. These results may be due to rheumatoid arthritis can have a detrimental effect on mood and mental wellbeing as patients are worry about their condition, prognosis and disability that may occur later. Also females are overwhelming with house hold work and have more responsibilities. These results disagree with the study performed by Ribeiro et al. (2022) which entitled "Psychological determinants of quality of life in patients with rheumatoid arthritis", who stated that near half of the studied sample had a severe level of anxiety, more than one third had moderate anxiety and less than one quarter had mild anxiety.

Regarding depression state, The results of this study revealed that, more than one quarter were mildly depressed, one tenth were moderately depressed and only two patients severely depressed. This result may be due to the majority of the studied patients were old age and lived in rural areas.

This result is supported by Peruri et al. (2019) which entitled " Assessment of health related quality of life, anxiety and depression in patients with rheumatoid arthritis", who stated that more than two thirds of the studied patients were normal, one third of them were mildly depressed, one fifth of them were moderately depressed and less than one fifth of the studied patients were severely depressed.

These results are in disagreement with the study conducted by Shoukry, (2021) which entitled " Prevalence of depression among hospital based rheumatoid arthritis population and its associated factors", that found one quarter of the studied patients were normal, more than one third were mildly depressed, near than half of them were moderately depressed and less than one fifth were severely depressed.

As regard to quality of life for rheumatoid arthritis, the finding of the current study revealed that, the majority of the studied patients had poor quality of life regarding arthritis pain, work, support from family and friends and level of tension. About two thirds of them has

poor quality of regarding mood, arm function, hand and finger function and self-care tasks. Also around two thirds have poor quality regarding walking and bending and mobility level. Moreover near half of them have average quality of life regarding walking and bending, social activity, self-care tasks, mood, mobility level and arm function. These results may be explained by rheumatoid arthritis affecting quality of life of patients in all domains such as physical, social and psychological.

These results are similar to the study done by Bączyk & Kozłowska, (2018) which entitled "The role of demographic and clinical variables in assessing the quality of life of outpatients with rheumatoid arthritis", who stated that the studied sample have poor quality of life regarding arthritis pain, walking and bending, work, level of tension and social activities. Also the studied patients have average quality of life regarding hand and finger function, mobility level, arm function, house hold tasks, self-care tasks and support from family and friends.

This result contraindicating a study performed by Vijay et al. (2018) which entitled "Quality of life among patients with arthritis seeking outpatient care at a government secondary health care centre", who stated that most of the studied patients was affected by arthritis pain followed by problem of walking and bending, level of tension and social activity. Work, household tasks, arm function and finger movements were not much affected.

Regarding total score of quality of life of patients under study, this study revealed that near two thirds of the studied patients had poor quality of life and about one third of them had average quality of life. This might be due to effect of the disease on all domains of health related quality of life. These findings disagree with the study performed by Chimbo et al. (2022) which entitled "Quality of Life and Major Depression among Outpatients with Rheumatoid Arthritis Attending a Nigerian Tertiary Health Institution" who stated that more than half of the studied patients had fair quality of life and more than one third had poor quality of life. And the study performed by Ribeiro et al. (2022) which entitled "Psychological determinants of quality of life in patients with rheumatoid arthritis" who stated that the majority of the studied patients had reasonable quality of life and only less than one quarter had poor quality of life.

In relation to disability and quality of life, the results of this study revealed that there was a highly statistical relation and negative correlation between disability and quality of life. This might be due to rheumatoid arthritis affects physical function and ability to perform activities of daily living. This result agree with the study performed by Intriago et al. (2019) which entitled "Quality of life in Ecuadorian patients with established rheumatoid arthritis" who stated that disability has a negative effect on quality of life in rheumatoid arthritis. And the study performed by Katchamart et al. (2019) which entitled "Health-related quality of life in patients with rheumatoid arthritis" who found that functional status has a significant impact on quality of life of patients with rheumatoid arthritis.

Regarding the relation between anxiety and quality of life, this study revealed that there was a highly statistical relation and negative correlation between level of anxiety and quality of life. This study agree with the study performed by Goma et al. (2019) which entitled "Impact of rheumatoid arthritis on the quality of life and its relation to disease activity" who stated that rheumatoid arthritis causes impairment of all aspects of QOL (limitation of physical function, physical disability, and pain), mental health disorders (anxiety and depression), and social, environmental, and also sexual dysfunction.

Regarding the relation between depression and quality of life, this study revealed that there was a highly statistical significant relation and negative correlation between depression and quality of life. This might be due to effects of disease on psychological state of patients. This result is similar to the study done by Zhang, Cai & Zhu (2020) which entitled "Depression has an impact on disease activity and health-related quality of life in rheumatoid arthritis: a systematic review and meta-analysis" who stated that RA patients

with depression tended to have higher disease activity and lower quality of life than the patients without depression.

The result is similar to Tański, Szalonka, & Tomaszewicz, (2022) which entitled "Quality of Life and Depression in Rheumatoid Arthritis Patients Treated with Biologics—A Single Centre Experience" who reported that Depression negatively correlates with QoL domains: the higher depression levels, the poorer the QoL in the psychological and social relationships domains. Depression is an independent determinant of decreased QoL. Also the study performed by Beşirli et al. (2020) which entitled "The relationship between anxiety, depression, suicidal ideation and quality of life in patients with rheumatoid arthritis" who found that there was a statistical negative correlation between depression and quality of life.

Conclusion:

Based on the research and research question, the study concluded that there was a high statistically significant relationship between socio-demographic characteristics (age and educational level) and quality of life. And there was a highly statistical significant relation between disability index and quality of life.

Also, there was a highly statistical significant relation between level of anxiety and depression and quality of life. There were three negative correlations between disability and quality of life, Anxiety and quality of life and depression and quality of life.

Recommendations:

- Provide different health awareness programs, educational interventions and mass media campaigns regarding the strategies to enhance the better quality of life for patients with rheumatoid arthritis as well as advertisement through the social media (Facebook, Instagram, Youtube), health messages through the cell phones for this target group.
- Provide educational media including booklet, handouts, videos, posters and CDs should be available at all times.
- Establish a center for the patient education with RA provided with teaching aids and facilitates to teach patients and their families ways to live with RA.

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