

## Association of depression and disability with health related quality of life in patients with rheumatoid arthritis

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### ABSTRACT

**Background:** Rheumatoid arthritis (RA) is a chronic progressive autoimmune disorder with frequent psychological comorbidities. Depression is also associated with increased functional disability in RA patients.

**Objective:** To determine the association of depression and disability with health related quality of life in patients with rheumatoid arthritis.

**Methods:** A cross sectional study was conducted in which 143 patients having rheumatoid arthritis were taken from the Islamabad rheumatology centers during period of 1<sup>st</sup> August 2019 to 30<sup>th</sup> January 2020 using non probability purposive sampling technique. All the diagnosed patients of Rheumatoid arthritis both male and female between age 35 and 60 were included in this study whereas patients with any other comorbidity were excluded. Chi square test was applied to determine the association. Data was analyzed using SPSS 21.

**Results:** In this study level of disability as measured by health assessment questionnaire disability index (HAQ-DI) out of 143 patients, (48.95%) patients experienced mild disability, 58 (40.55%) and 15(10.48%) patients presented with moderate and severe disability respectively. Results of severity of depression as measured by beck depression inventory scale (BDI) were: 23(16.1%) patients had mild depression, 22 (15.4%) patients had moderate depression, and 15 (10.4%) patients had severe depression. Association of disability and depression with health related quality of life (HRQOL) was significant with  $p < 0.05$ .

**Conclusion:** It is concluded that there is significant association of disability and depression with health related quality of life among patients with rheumatoid arthritis.

**Key words:** Depression, Disability, Health related quality of life (HRQoL), Rheumatoid arthritis.

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### Introduction:

Rheumatoid arthritis (RA) is a long term, ongoing, inflammatory autoimmune disorder that has an adverse effect on patient's body and mental health(1,2). Rheumatoid arthritis is a symmetrical arthritis influencing two or more small and big synovial joints. It particularly involves joints of wrist, hands, feet, shoulder, hip and knee. Optic irritation and lung nodules are extra articular representation in chronic cases of RA.(3) In up to 90% of patients with RA, early diagnosis and treatment can prevent or significantly decrease the progression of joint deterioration, preventing severe disability.(4) The occurrence of RA is

associated with reproductive hormones, life style, genetics and environmental factors. A considerable effect on working disability and joint pain is due to joint destruction which is an outcome of RA.(5)

Epidemiological researches outlined the prevalence of RA in various European, American, Asian and Australian populations that varies from 0.2 to 1.0%. Prevalence of RA outlined in Pakistan is 1.0 to 0.2%.(6)

Rheumatoid arthritis usually causes an inability to do everyday tasks, a switch in family roles, difficulty in performing occupational tasks, more economic load, community reliance and decreased fun tasks and consequently, may have considerable impact on quality of life.(2) Rheumatoid arthritis influences both body and psychosocial aspects of health related quality of life ( HRQOL).(7) HRQoL is subgroup of quality of life (QoL) and constitutes the physical, mental and community zones of health. HRQoL constitutes those zones of a person's health that may be manageable to the treatment protocols.(8)

Younger patients of RA have more chances of

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developing depression than older as frequency of depression is remarkably linked to age.(9) In patients of RA, gender is a risk factor for depression. A Taiwanese study described that in RA diagnosed patients, women are at higher risk of developing depression than men.(10) Some factors like disease severity, a decreased response to arthritis treatment and relapse are associated with the development of depression and anxiety.(11)

Disability is the major outcome of RA and has remarkable effects on activities of daily living and work life.(12) Excessive mental disturbance is developed by the physical and functional stressors of RA. Mental stress, depression and anxiety are very common among patients with RA.(13)

Health related quality of life (HRQoL) of patients with RA is significantly affected by substantial physical and mental disturbances. Normally HRQoL indicates any health illness that reduces patient's body capacities and abilities to work in different communities and roles of life as well as daily activities and psychological health. There are six groups linked with individual's general HRQoL; biological and mental condition, disease activity, working abilities, overall health awareness, qualities of patients and environmental features.(14) A multivariate analysis showed that male gender, antidepressant use, and a higher health assessment questionnaire (HAQ) score were all significantly linked with an elevated risk of depression in RA patients, which is currently underdiagnosed and poorly managed.(15) This study was conducted with the aim to determine the association of depression and disability with health related quality of life in patients with rheumatoid arthritis.

### Methods:

The cross sectional study was conducted from August 2019 to January 2020. Non-probability purposive sampling technique was used. Sample size was calculated by using epitool keeping the confidence interval 95%, assumed population standard deviation was taken as 12.2 and acceptable error 2, upon calculation 143 sample size was obtained.(16) Data was collected from Bilal Hospital Rawalpindi and Islamabad Rheumatology centre. Patients were selected on the basis of inclusion and exclusion criteria. Our inclusion criteria was both genders (Male and Female), age 30 to 60 years and diagnosed cases of rheumatoid arthritis was enrolled in this study. The present study did not consider patients with history of other current primary inflammatory joint disease, any other systemic

or psychological illness, current infection and disability due to other comorbidities. A written informed consent were taken from the participants and were also ensured that the study has no emotional and physical harm given to them and that all data collected was recorded with their identity protected and confidentially kept and not disclosed to anyone. We used 3 tools i.e.; HAQ-DI (17) which is used to evaluate the physical activity in RA patients and the Beck depression inventory scale 2 (BDI-II) was used for assessing level of depression; where 0 to 9 score depicts that patient is not depressed, 10-18 indicate mild to moderate, 19-29 indicates moderate-severe and 30-63 indicates severe depression, higher score indicate greater depressive severity.(18) HRQoL was evaluated by using SF-36 which has 36 items, categorized into 8 domains and total score is obtained between the range from 0-100, of which 0 represents poor HRQoL and 100 represents highest score of good HRQoL.(19) The study was based on personal interviews with patients at local tertiary care facilities with the approval from ethical review committee of Riphah College of Rehabilitation and Allied Health sciences, Riphah International University, Islamabad (RIPHAH/RCRS/REC/Letter-00630). For descriptive analysis frequency, percentages and mean with standard deviation was used. Normality was check by shapiro-wilk test. Data was found normally distributed. Chi square test was applied to determine the association of disability and depression with health related quality of life in rheumatoid arthritis patients. P values < 0.05 was considered as significant.

### Results:

Out of 143 patients 106 (74.1%) were female and 37 (25.9%) were males. The mean age of participants was 43.15±9.53 years as shown in table 1. The role limitation due to physical and emotional problem in patients with rheumatoid arthritis has been shown in table 2. It was found that 40 (27.97%) patients had no depression 73 (51.04%) patients presented with mild to moderate depression, whereas 20 (13.98%) and 4 (2.79%) patients presented with moderate to severe and severe depression respectively, chi square test was used to determine the association between depression with health related quality of life and a significant difference was found between depression and HRQoL among RA patient with p value <0.01. Level of disability as measured by health assessment questionnaire disability index (HAQ-DI) as shown in Table 3 was as follow: Out of 143 patients, 70 (48.95%) participants' experienced mild disability, 58 (40.55%) patients had moderate and

15(10.48%) patients experienced severe disability. In order to determine the association between disability and HRQoL chi square test was used and a significant difference with P value 0.03.

**Table 1: Baseline demographic characteristics**

Variable	Mean ± SD	n (%)
Age (years)	43.15±9.53	
<b>Gender</b>		
Male		37 (25.9%)
Female		104 (74.1%)

**Table 2: Frequency (%) of role limitation due to physical and emotional problem in patients with rheumatoid arthritis**

	Role limitation due to physical problems n (%)	Role limitation due to emotional problem n (%)
<b>Poor</b>	44 (30.8%)	42 (29.4)
<b>Fair</b>	30 (21.0%)	28 (19.6%)
<b>Good</b>	49 (34.3%)	10 (7.0%)
<b>Very good</b>	16 (11.2%)	49 (34.3%)
<b>Excellent</b>	4 (2.8%)	14 (9.7%)

**Table 3: Distribution of depression, disability and health related quality of life (HRQoL)**

	Variable	n (%)
<b>Health related quality of life</b>	Poor physical functioning	18(12.5%)
	Fair physical functioning	38(26.5%)
	Good physical functioning	39(27.2%)
	Very good physical functioning	43(30.06%)
	Excellent physical functioning	5(3.45)
<b>Depression</b>	No depression	40 (27.97%)
	Mild to moderate	73 (51.04%)
	Moderate to severe	20 (13.98%)
	Severe	4 (2.79%)
<b>Disability</b>	Mild	70 (48.95%)
	Moderate	58 (40.55%)
	Severe	15 (10.48%)

### Discussion:

This study has investigated the association of disability and depression with health related quality of life in patients with rheumatoid arthritis. HRQOL is significantly affected by level of depression and severity of disability. Results had shown that patients who were physically active were less prone to develop disability and depression. In our study majority of the patients had mild disability and with mild to moderate depression. Both disability and depression had adverse effects on HRQoL.

Rupp et al conducted a research in 2006, to

determine the relationship between disability and health related quality of life in association with radiographic damage, disease severity, pain and depression. Data was collected from 307 patients among whom 71% were females and their mean of age was 51.1years (SD 13.4). The study explored that there is a close relationship between disabilities, health related quality of life and depression. Pain is an essential component of disability and physical health while depression is an essential component of mental health. Depression is associated with disability that support the result of present study.(20)

L Bazzichi et al conducted a research in 2005 to assess the impact of disability and depression on health related quality of life in rheumatoid arthritis patient. Sample of study was n=92. 61.4(SD ±12.7) years was the mean age of rheumatoid arthritis patient, among which majority were female .Mean score of HAQ was 1.12.On contrast between male and female MOS SF-36 Scores showed that female had decreased level of physical functioning, emotional well-being and energy. There is a remarkable association between depression and health related quality of life.(21) Our results had shown that patients who were physically active were less prone to develop disability and depression. Research conducted by Tander B et al in 2008 to evaluate health related quality of life and depression in rheumatoid arthritis patients. All the patients were between the age of 24 and 56 years. 39.85±6.59 years were the calculated mean and standard deviation of their age. Study had shown the negative association between the total score of SF-36 with the total score of BDI. This study has reported that depression has negative effect on health related quality of life of patients with rheumatoid arthritis.(22)

Shim E J et al studied the quality of life in patients with rheumatoid arthritis in June 2018, the study shows that pain has negative relation with physical disability and depression which as a result decrease health related quality of life HRQOL. Physical disability and depression decreases quality of life.(23) Our study results have revealed that about majority of the R.A patients had shown association with depression. It had seen that depression and disability was positively associated with HRQoL.

A study was directed by Katchamart et al., including 464 patients, 59 ± 11.4 years was the calculated mean of patients age, among which 85% were female. Functional disability score (HAQ-DI) was mild (0.50).The mean and standard deviation of depression

was recorded as  $3.83 \pm 3.11$ . The study showed that depression is only the element that has a negative impact on general health score.(24) Patients with rheumatoid arthritis suffer from depression and disability which ultimately lead to reduced health related quality of life. So, our results are same as previous studies.

A study with sample size  $n=102$  was performed in Lahore in 2015 to assess the degree of depression and its association with disease activity. Beck depression inventory scale questionnaire had been used to assess the level of depression while health assessment questionnaire (HAQ-DI) and DAS-28 questionnaire were used to evaluate disease activity of rheumatoid arthritis. Results revealed that majority of the patients with rheumatoid arthritis had mild depressive symptoms while a few patients had shown moderate to severe depressive symptoms. Our study had shown the same result. Intensity of these symptoms was positively associated with disease activity. It had been shown that patients with depression were more prone to develop disability. Depression had adverse effect on patient's social life resulting in increased burden of disease among patients with rheumatoid arthritis.(25) Limitation was related to sample size and time duration of study. In order to determine the association, information related to other clinical manifestations with the levels of inflammatory markers could have been more beneficial. Fitness experts must encourage patients to exercise regularly to reduce the element of disability. A vast study should be done to evaluate the mechanism of association of disability and depression with health related quality of life alongwith inflammatory biomarkers in rheumatoid arthritis patients.

#### **Conclusion:**

It is concluded that there is a significant association between depression and disability with health related quality of life among patients with rheumatoid arthritis. Depressed patients with RA have increased level of functional disability and poor health related quality of life.

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**Conflict of interest:** None

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**Authors Contribution:**

**Jahan S:** Conception of work, analysis, revising, final approval and agreement to be accountable for all the work.

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