International Journal of Community Medicine and Public Health
Sharma S et al. Int J Community Med Public Health. 2021 Oct;8(10):4742-4749
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20213770

Original Research Article

Predictors of quality of life of Pakistani women with rheumatoid arthritis: a cross-sectional study

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Received: 24 August 2021
Accepted: 17 September 2021

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ABSTRACT

Background: Rheumatoid arthritis (RA) is characterized as a chronic inflammatory disease indicated by stiffness, pain, inflammation, and impaired mobility. This results in joint impairment, poor workability, productivity, and afterward, it curtails the quality and expectancy of life of an individual. The aim of this research is to assess the quality of life of Pakistan women with RA and assess various factors affecting it.
Methods: It was a cross-sectional study conducted in the Orthopedics department of the Indus Hospital and Health Network, Karachi Pakistan, where we assessed quality of life in sample of women with RA. A consecutive sampling technique was used to enrol women with rheumatoid arthritis who were seen in the Orthopedics outpatient clinic during the study period (February to May 2021).
Results: Of the 134 women with RA, 72.39% of women were unemployed, 54.48% of women had family monthly income of 16000 PKR or more and 44.03% of women reported at least one comorbidity other than RA. According to linear regression analyses, women having RA with severe disease activity tended to have tended to have low physical functioning, vitality, emotional wellbeing, social functioning, pain and general health as compared to patients with remission, low disease and moderate disease activity. Absence of family support in disease management can impact vitality and emotional wellbeing with decrease in scores of -85.20 and -120.66 respectively.
Conclusions: Guidelines need to developed and implemented for assessing psychological domains of these patients for assessment of quality of life. This will help in maintaining and improving QoL of women with RA.

Keywords: Quality of Life, Rheumatoid Arthritis, Predictors, Women, Pakistan

INTRODUCTION

Rheumatoid arthritis (RA) is characterized as a chronic inflammatory disease indicated by stiffness, pain, inflammation, and impaired mobility.[1] This results in joint impairment, poor workability, productivity, and afterward, it curtails the quality and expectancy of life of an individual. It is estimated that 0.5%-1% of the population globally, with a higher prevalence among both elderly people and women, is affected by rheumatoid arthritis. This statistic makes it rank next to osteoarthritis and gout as the foremost reason for disability.[1]

According to a study conducted in a tertiary care unit of southern Karachi, it was reported that out of 4900 patients, 633 (12.9%) of them visited a rheumatology clinic in a hospital for their treatment and follow-up. This result explains the burden of disease in our region, which was 0.142% previously, and now has been energetically increased and more commonly in females.[2] RA has an extensive financial impact on health care payers, family, and their society as well.

At an early stage of this disease, the most affected joints are hands and feet. The inflammatory process that occurs in the synovium leads to destruction in all elements of the joint.[2] As a result, an individual experiences morning stiffness, joint and periarticular edema, pain, intra-articular effusion, narrowed range of motion in joints, and muscle weakness. As the disease progresses, the activity of daily living gets very difficult to perform by an individual leading to increased disability and loss of self-reliance.[3] Thus, RA is considered as a disease with a significant impact on all domains of quality of life.[4]

Aside from disease prevalence, many pieces of literature also describe the comorbidity condition of patients with rheumatoid arthritis. Hypertension, depression, metabolic disorders like diabetes mellitus and dyslipidemia were frequently observed comorbidities along with altered blood pressure and glucose levels and high cardiovascular risk score as modifiable risk factors.[1]

The observational study was conducted in Islamabad, Pakistan, which concluded that the incidence of RA was higher in women as compared to men. Most of those patients who had RA were in the 4th and 5th decades of life had seropositive disease and elevated ESR levels. There was a high prevalence of joint deformities.[4]

Despite this earlier lack of attention, several studies in the literature assessing knowledge of RA and its physical aspects among Pakistan population. However, no studies have been conducted specifically on women to determine the influence of different sociodemographic and clinical factors affecting the quality of life of Pakistani women with RA. It has been observed in many studies that rheumatoid arthritis especially affects women, with a female to male ratio of approximately 3:1, which is consistent with other reported studies.[5] This ratio roughly equals 60-75 years of age. The onset of RA occurs ten times earlier in women than in men, which affects their quality of life greatly.[6] Clinicians will benefit from this research by promptly being able to assess the quality of life to offer proper care and treatment. The aim of this research is to assess the quality of life of Pakistan women with RA and assess various factors affecting it.

METHODS

It was a cross-sectional study conducted in the Orthopedics department of the Indus Hospital and Health Network, Karachi Pakistan, where we assessed quality of life in sample of women with RA. Ethical approval for this study was taken from Institutional Review Board of the Indus Hospital. A consecutive sampling technique was used to enroll women with rheumatoid arthritis who were seen in the Orthopedics outpatient clinic during the study period (February to May 2021). They were asked to participate in a survey to assess quality of life. The participants were informed about the study aim and background. Only patients who agreed to be a part of the study were included in a survey. We excluded women who had a Rheumatoid arthritis from less than 1 year. Total 134 women were enrolled in the study with Rheumatoid arthritis during the study period.

The survey was divided into three sections including sociodemographic characteristics in which we asked women about their age, educational status, employment status, marital status, monthly income and family support in disease management. Besides this, we also collected data about disease severity, comorbidities and duration of disease.

In this research, we assessed the quality of life of women with Rheumatoid Arthritis using the Medical Outcome Study Health Survey 36-Item Short Form (SF-36). The questionnaire was found to be valid and reliable and its Urdu version is available publicly. The SF-36 is composed of items that address eight concepts of health including physical health, physical functioning, role limitations due to emotional problems, social functioning, vitality, bodily pain, emotional well-being, and general health perceptions. SF-36 items scoring was based on the RAND Health Scoring System. For example, the total of each listed domain runs from 0 to 100, with 0 indicating poor health and 100 indicating optimal health. Participant anxiety was assessed using Hamilton Anxiety Rating Scale (HAM-A). The items were graded on a scale of 0 to 4, with a total score range of 0 to 56. A score of 7 or less indicates no anxiety, 8-14 indicates mild anxiety, 15-23 indicates moderate anxiety, and 24 or more indicates severe anxiety.[7] Chron Disease Activity Index (CDAI) score was used to assess disease severity that was divided into four categories based on the total score including remission (Less than 150), mild (150-219), moderate (220 to 450) and severe (more than 450).[8]

Data analysis

The data analysis was performed using STATA Windows version 16.0. For continuous data, Descriptive statistics such as mean and standard deviation were calculated to present and for categorical variables, frequencies and percentages will be calculated. The Bonferroni correction was used for comparison of Quality of life between the groups in order to account for multiple comparisons. Particularly, we have compared all eight domains of SF-36 across clinical and sociodemographic characteristics. In addition, multiple linear regression model was used to assess the predictors of the SF-36. Regression coefficients were used for interpretations of the findings obtained from

linear regression. Significance level was set at 0.05 in the multivariable analysis.

RESULTS

The study included 134 female patients with Rheumatoid Arthritis.

The mean age of participants was 45.31 (±SD=11.55) years with an age range between 18 and 78 years and 37.31% of women had an age of 50 years or more. Of the sample studied, 72.39% of women were unemployed, 54.48% of women had family monthly income of 16000 PKR or more and 44.03% of women reported at least one comorbidity other than RA. Regarding disease severity, 41.04% and 42.54% of participants were suffered with severe disease activity and moderate disease activity respectively. Other demographic and clinical characteristics are presented in Table 1. Difference across clinical and sociodemographic data are shown for all 8 domains in Table 1 and Table 2.

Women with RA whose age was more than 50 years, had no formal education, had any comorbidity, had severe disease activity and had no family support in disease management reported poor physical functions. RA patients having income level of less than 16000 PKR, severe disease activity and moderate or severe anxiety had low scores of role limitations due to physical health. RA patients having moderate or severe anxiety had lower scores regarding role limitations due to emotional problems. RA patients with any comorbidity, severe disease activity, no family support and moderate or severe anxiety reported poor vitality. RA patients who did not attend any formal education, had severe disease activity, had family support and had moderate or severe anxiety reported low social functioning. Emotional well-being was poorer in RA patients with employment, with any comorbidity, with severe disease activity, had no family support and had moderate or severe anxiety. We noted worse pain in RA patients with age of more than 50 years, with any comorbidity and with severe disease activity. We discovered poor general health in patients who are unemployed, with any comorbidity, with severe disease activity and with moderate or severe anxiety.

Table 1: Differences in quality of life by demographic and clinical characteristics.

Variable	N (%)	Physical functioning		Role limitations due to physical health		Role limitations due to emotional problems		Vitality	
		Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
Age (in years)									
<50	84 (62.69)	342.26 (285.96)	0.021*	72.61 (126.44)	0.287	75.0 (103.98)	0.206	155.71 (68.40)	0.54
≥50	50 (37.31)	248.00 (202.02)		60.00 (125.54)		60 (98.97)		157.20 (73.40)	
Employment status									
Employed	37 (27.61)	275.67 (257.28)	0.792	86.48 (135.73)	0.145	70.27 (105.05)	0.475	158.91 (53.94)	0.394
Unemployed	97 (72.39)	319.07 (262.84)		60.82 (121.24)		69.07 (101.40)		155.25 (75.41)	
Income status									
<16000 PKR	61 (41.52)	294.26 (253.16)	0.711	42.62 (102.40)	0.032*	80.82 (108.85)	0.921	149.50 (66.89)	0.845
≥16000 PKR	73 (54.48)	317.81 (268.78)		89.04 (139.006)		55.73 (92.24)		161.91 (72.58)	
Did they attend any formal education									
Yes	92 (68.66)	339.13 (280.28)	0.017*	67.38 (118.70)	0.528	76.08 (99.85)	0.075	157.82 (71.31)	0.352
No	42 (31.34)	236.90 (198.48)		69.04 (140.53)		54.76 (106.38)		152.85 (67.97)	
Any comorbidity									
Yes	59 (44.03)	262.00 (227.18)	0.013*	60 (131.39)	0.201	79.66 (104.68)	0.151	137.86 (67.10)	0.002*
No	75 (55.97)	364.40 (290.67)		77.96 (120.80)		61.33 (99.85)		179.66 (67.20)	
Disease severity									
Remission	7 (5.22)	385.71 (215.47)	0.001*	57.14 (113.58)	0.048*	72.73 (107.93)	0.554	182.85 (62.64)	0.031*

Continued.

Variable	N (%)	Physical functioning		Role limitations due to physical health		Role limitations due to emotional problems		Vitality	
		Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
Low disease activity	15 (11.19)	436.66 (293.05)		100 (141.42)		93.33 (116.29)		180 (74.83)	
Moderate disease activity	57 (42.54)	381.57 (269.03)		54.38 (100.125)		64.91 (97.26)		166.66 (74.96)	
Severe disease activity	55 (41.04)	184.54 (196.93)		74.54 (145.57)		28.57 (48.79)		135.63 (59.83)	
Family support in disease management									
Yes	72 (53.74)	335.88 (210.24)	0.032*	71.35 (106.35)	0.211	71.85 (88.51)	0.166	182.45 (83.46)	0.006*
No	62 (46.26)	280.65 (209.57)		65.66 (110.25)		69.62 (82.48)		139.60 (76.52)	
Anxiety									
No anxiety/mild anxiety	60 (44.78)	295.36 (214.63)	0.236	82.32 (122.35)	0.001*	79.57 (80.15)	0.028*	190.88 (66.43)	0.001*
Moderate/severe anxiety	74 (55.22)	288.73 (221.66)		55.14 (108.65)		61.21 (80.47)		131.25 (71.59)	

* Significant at ≤0.05

Table 2: Differences in quality of life by demographic and clinical characteristics.

Variable	Emotional wellbeing		Social functioning		Pain		General health	
	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
Age (in years)								
<50	220.95 (111.76)	0.211	111.30 (52.84)	0.118	84.04 (39.70)	0.006*	247.91 (121.81)	0.081
≥50	205.20 (104.65)		100.50 (47.78)		66.30 (38.40)		219.00 (114.12)	
Employment status								
Employed	180.54 (83.46)	0.022*	102.02 (38.81)	0.767	82.70 (38.23)	0.174	272.29 (101.34)	0.017*
Unemployed	228.24 (114.99)		109.28 (55.11)		75.41 (40.68)		223.71 (123.44)	
Income status								
<16000 PKR	223.93 (109.71)	0.196	102.87 (53.64)	0.812	71.06 (37.53)	0.093	215.98 (110.78)	0.967
≥16000 PKR	207.67 (108.66)		110.96 (48.94)		82.74 (41.49)		254.79 (124.14)	
Did they attend any formal education								
Yes	224.34 (110.85)	0.073	115.75 (51.85)	0.002*	82.71 (39.40)	0.015*	235.87 (118.62)	0.571
No	194.76 (103.31)		88.69 (44.58)		65.83 (39.34)		239.88 (122.48)	
Any comorbidity								
Yes	189.33 (100.88)	0.001*	103.67 (48.75)	0.179	84.91 (42.39)	0.028*	259.32 (115.77)	0.021*
No	247.79 (111.04)		111.86 (54.01)		71.53 (37.28)		219.66 (120.05)	
Disease severity								
Remission	260.00 (126.49)	0.045*	121.42 (33.63)	0.048*	85.71 (50.69)	0.001*	328.57 (52.89)	0.017*
Low disease activity	257.33 (109.24)		128.33 (47.12)		101.66 (32.16)		290.00 (92.49)	

Continued.

Variable	Emotional wellbeing		Social functioning		Pain		General health	
	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
Moderate disease activity	224.21 (115.74)		111.84 (49.79)		86.40 (45.30)		238.59 (134.63)	
Severe disease activity	188.36 (94.57)		95.00 (53.22)		60.45 (26.67)		209.54 (105.57)	
Family support in disease management								
Yes	248.34 (95.47)		118.09 (54.27)		72.28 (48.19)		233.65 (99.89)	
No	170.76 (89.64)	0.017*	92.37 (49.77)	0.027*	73.35 (38.47)	0.755	229.91 (107.95)	0.122
Anxiety								
No anxiety/mild anxiety	235.66 (101.28)		127.65 (62.34)		71.59 (44.63)		268.39 (101.63)	
Moderate/severe anxiety	183.44 (93.68)	0.003*	81.96 (56.77)	0.001*	68.27 (39.96)	0.266	198.52 (97.28)	0.013*

* Significant at p≤0.05

Table 3: Multiple linear regression showing predictors of quality of life in women with rheumatoid arthritis.

Variable	Physical Functioning		Role limitations due to physical health		Role limitations due to emotional problems		Vitality	
	B	P value	B	P value	B	P value	B	P value
Income status								
<16000 PKR			-49.28	0.028				
≥16000 PKR	Reference							
Did they attend any formal education								
Yes	Reference							
No	-101.67	0.029						
Any comorbidity								
Yes	-92.25	0.028					-42.94	0.001
No	Reference							
Disease seveirty								
Remission	303.61	0.002					59.82	0.025
Low disease activity	248.93	0.001					37.33	0.053
Moderate disease activity	183.14	0.001					30.93	0.014
Severe disease activity	Reference							
Family support in disease management								
No							-85.15	0.002
Yes	Reference							
Anxiety								
No anxiety/mild anxiety			90.15	0.001	88.2	0.031	68.15	0.001
Moderate/severe anxiety	Reference							

Table 4: Multiple linear regression showing predictors of quality of life in women with Rheumatoid Arthritis.

Variable	Emotional wellbeing		Social functioning		Pain		General health	
	B	P value	B	P value	B	P value	B	P value
Age (in years)								
<50	Reference							
≥50					-16.78	0.014		

Continued.

Variable	Emotional wellbeing		Social functioning		Pain		General health	
Employment status								
Employed	Reference							
Unemployed	-43.31	0.036					-51.86	0.023
Did they attend any formal education								
Yes	Reference							
No			-31.71	0.001	-15.29	0.035		
Any comorbidity								
Yes	-52.24	0.005					-51.87	0.012
No	Reference							
Disease seveirty								
Remission	101.48	0.016	43.22	0.033	41.65	0.007	116.88	0.012
Low disease activity	61.73	0.041	35.63	0.013	42.93	0.001	70.39	0.035
Moderate disease activity	37.65	0.054	13.14	0.157	23.35	0.001	26.63	0.214
Severe disease activity	Reference							
Family support in disease management								
No	-120.66	0.002						
Yes	Reference							
Anxiety								
No anxiety/mild anxiety	57.19	0.001	89.44	0.003			62.15	0.018
Moderate/severe anxiety	Reference							

Table 3 and Table 4 shows the linear regression analysis findings, RA patients with severe disease activity tended to have low physical functioning, vitality, emotional wellbeing, social functioning, pain and general health as compared to patients with remission, low disease and moderate disease activity. RA patients with no or mild anxiety have increasing score of role limitation due to physical health, role limitation due to emotional problems, vitality, emotional well-being, social functioning and general health (with scores of 90.15, 88.2, 68.15, 57.19, 89.44 and 62.15 respectively) as compared to RA patients with moderate or severe anxiety. Presence of any comorbidity was a predictive of worsening physical functioning, vitality, emotional well-being and general health (-92.25, -42.9, -52.24 and -51.87 respectively). Absence of family support in disease management is another predictive factor of vitality and emotional wellbeing with scores of -85.20 and -120.66 respectively. RA patients who did not attend any formal education have lower physical functioning, social functioning and pain (-101.67, -31.71, and -15.00) that RA patients who attended formal education. Unemployment was predicted to emotional well-being and general health with scores of -43.31 and -51.86 respectively. Income status is a predictive as RA patients with monthly income of less than 16000 PKR have worsen score of role limitations due to physical health i.e., -49.28. Lastly, RA patients with age of more than or equal to 50 years have lower pain scores as compared to patients having an age of less than 50 years i.e., -16.78.

DISCUSSION

The current study aimed to assess the quality of life of Pakistani women with Rheumatoid arthritis and compare it with their clinical and sociodemographic factors. Despite of the fact that assessment of QoL is an important part of studies related to chronic illness, very limited data is available on QoL in Pakistan. The evidence of findings reported in the existing literature supports the findings of the current study, which shows that RA patients report poor quality of life.[9,10] Although, we included only women in the study and it is believed that the quality of life of women is worse than male with the same condition.[11] A study by Molina et al shows that income level affects the QoL of RA patients. The study found that patients with low level of income correlated with delay in disease modifying anti-rheumatic drugs and long clinician waiting times.[12] Our study also found that lower income level affect one of the eight domains of QoL i.e., role limitation due to physical health. Thus, we can observe an urgent need for reduction of delay in treatment along with lifestyle modification in order to enhance their overall quality of life. Our study has also suggested that employment was a predictor of emotional wellbeing and general health among women in Pakistan. Employment can enhance wellbeing of women by providing them with the sense of security in relation to the management of disease. Employed women do not consider them as a burden as they are self-sufficient enough to bear all the expenses of the disease leading to enhancement of their wellbeing and psychological health.[13]

In this research, significance difference was observed in pain when measured age groups. Women with RA having age of 50 years or more reported more pain than women of less than 50 years. Women who attended formal education reported better physical function and social function than those without any formal education. The findings of this study are consistent with the findings from past studies in which QoL in RA patients was affected negatively by age of patients and affected positively by education.[14]

We also noted that women with RA who reported any comorbidity have low physical functioning, vitality, emotional well-being and general health. Presence of comorbidity is associated with poor quality of life in previous studies as well.[15] Presence of other health related issues increases overall burden on patients affecting their ability to manage the disease well. Thus, it creates negative impacts on their overall physical and psychological wellbeing. The findings of our study have also suggested that disease severity is one of the significant factors affecting most of the domains of QoL. It means the more severe the illness is, the more severe the impact it can create on physical and mental health. The study conducted by Karimi et al, reported similar findings.[16]

Previous studies have also reported that patients with severe disease activity tended to have low quality of life.[17] Our study has also shown similar findings. The current study has shown that women with severe activity has disturbed quality of life as it impacts on their physical functioning, vitality, social functioning, emotional wellbeing, pain and general wellbeing. According to our study, anxiety indicates considerable deterioration in the women with RA QoL. Anxiety tends to many SF-36 domains including role limitations due to physical health, role limitations due to emotional health, vitality, social functioning, emotional welling and general health. This could be because of the impact of anxiety of overall perception of women about the disease and their ability to manage the condition well, since past studies have also shown that anxiety is one of the significant predictors towards deteriorating quality of life.[10] Therefore, psychological interventions need to be planned along with treatment of RA to reduce the level of anxiety among women with RA.

This study has several limitations. Firstly, the study design used was a cross-sectional study, thus study findings will be interpreted with cautious as the cross-sectional assess associations and it may not allow causality. Secondly, only those women with RA were invited to be a part of the study, who attended Indus Hospital and Health Network enrolled in the study. Thirdly, sample size is very small as only 134 women were enrolled in the study. This study will be of interest to quality-of-life researchers, Orthopedics researchers, care providers, and women with rheumatoid arthritis. This research could benefit the Pakistani health system by developing educational programmes or endorsing or sponsoring public health policies to improve the quality of life of Pakistani women with Rheumatoid arthritis. Future studies need more sample size and sample need to be enrolled from different centers to get more generalizable findings. In spite of these limitations, in this study it was tried to assess the factors that can impact quality of life of women with RA to understand and plan strategies that will not just focus on symptomatic treatment but also on psychological and physical aspects to enhance quality of life.

CONCLUSION

The study was conducted on Pakistan women with rheumatoid arthritis to assess their quality of life using SF-36. In several SF-36 domains, Pakistani women having RA with severe disease activity, with any comorbidity, with moderate and severe anxiety or with no family support in disease management tend to experience significantly poor quality of life. For women with RA, family needs to be involved during care and treatment in order to enhance effectiveness of interventional programs. Besides this, guidelines need to developed and implemented for assessing psychological domains of these patients for assessment of quality of life. This will help in maintaining and improving QoL of women with RA.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Sharma S, Eapi S, Muqtadir A, Bokhari A, Zulfiqar M, Jiwani K et al. Predictors of quality of life of Pakistani women with rheumatoid arthritis: a cross-sectional study. Int J Community Med Public Health 2021;8:4742-9.