

Gender-Based Frequency and Associated Disability of Rheumatoid Arthritis: A Cross-Sectional Study

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ABSTRACT

Objective: To determine the frequency and associated disability of rheumatoid arthritis in male and female patients

Methodology: This was a cross sectional survey conducted at the National Institute of Rehabilitation Science, Pakistan Institute of Medical Science and Pakistan Railways Hospital for one year from February 2019 to February 2020. Study includes diagnosed cases of both genders with ages between 30 to 60 years and fulfilling the 1987 American College of Rheumatology (ACR) criteria. Patients with disabilities due to other reasons were excluded. Sample size of the study was calculated to be 143 using Epi-tool. Sampling technique was non-probability purposive sampling technique. For this study WHODAS-2.0 screening tool was used.

Results: Out of 143 patients, 52 (36.4%) were males and 91(63.6%) were females. The mean age of both males and females was 43.41 ± 8.605 SD. We found that 18 (34.6%) male patients presented with mild disability. While in females, 54 (59.3%), 32 (35.16%), 5 (5.49%), and 0 (0%) patients out of 91, reported with mild, moderate, severe, and extreme disabilities respectively.

Conclusion: RA is more prevalent in females than in males with the majority of the patients reporting mild disability and more female patients disabled than men.

Key Words: Disability, functional activities, rheumatoid arthritis, WHODAS-2.0

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INTRODUCTION

The term Rheumatoid Arthritis was first coined by A.B. Garrad who was a French medical student in 1858¹. Rheumatoid arthritis is a chronic hypersensitivity response that differs from other diseases due to its massive involvement of synovial membrane². The cytokines are released from synovial membrane that causes cartilage and loss of bone³. It usually includes little diarthrodial joint⁴ and is marked by consistent inflammation in the joints causing ache, soreness, and rigidity of the joints, eventually leading to joint demolition, dysfunction, and poor quality of living⁵. Most of the time, the exact etiology of this disease is idiopathic but sometimes it is considered to be multi-factorial. It can be genetic, environmental, and can be due to the involvement of immune system⁶.

The effect of this disease is considered to be more common in younger to middle age individuals than in the elderly⁷.

Disability stands for the condition in which someone is unable to perform daily activities of life. The pathway starts from pathology, impairment, functional limitation, then leads to disability. Verbrugge states that life activities are classified into three groups: Obligatory activities, committed activities, discretionary activities⁸.

Rheumatoid arthritis joint inflammation can prompt extreme disability. RA is said to be associated with more than seven-fold chances of disablement, which in turns compares with adults in the same community. RA not only exerts its effects on joints but also affects the behaviour of individual⁷.

One of the common related problems is low confidence and low self-esteem that forces the individuals to pull back from their family and surroundings. Individuals prefer to isolate rather than choose gatherings and also restrict their social contacts⁴. RA fits in the model of ICIDH (International Classification of Impairment, Disability and Handicaps) described by Verbrugge and Jette⁷.

The prevalence of RA is considered more common in females and is rated to be 2 to 3 times more common in women than in men until the age of 65 years. After 65 years, the rate of incidence becomes the same in

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both genders. The reason why women suffer more from RA is hormones and genes¹.

Worldwide frequency of rheumatoid arthritis is approximately 0.3-1.2 %. One study shows global effect of approximately 0.5% to 1% in adults⁶. In India, the frequency of rheumatoid arthritis is 0.75%⁹. According to one study in Pakistan, the incidence of RA was 0.14% and in male patients it was from 0.14% to 1.08% while in females 0 to 2.80%¹. One study showed that RA is common in Northern Areas where the incidence was 0.55% and 0.142% in Karachi population⁵. Genetic and ethnic factors also contribute to the prevalence of rheumatoid arthritis⁵.

In Pakistan, the prevalence of RA, disability associated with this disease and how much it influences patient’s physical, mental, and social well-being has not been studied well. Few studies have been carried out on the incidence of RA and the impact of disability on a patient’s life, so there is a need to conduct more studies to determine the incidence of RA, as it may help to demonstrate the exact cause of disease and to prevent disease related disability^{1,10}. This study was conducted with the aim to determine the frequency and associated disability of rheumatoid arthritis in both genders.

METHODOLOGY

This cross sectional study was carried out with the approval of Riphah College of Rehabilitation Sciences’ Ethical Review Committee (RIPHAH/RCRS/REC/00635), Riphah International University Islamabad, Pakistan in collaboration with the Pakistan Institute of Medical Sciences, National Institute of Rehabilitation Medicine, Islamabad and Pakistan Railways Hospital, Rawalpindi. The study duration was one year from February 2019 to February 2020. Sample size was calculated using Epi tool keeping 95% confidence interval, desired precision was taken as 2 and assumed population standard deviation was taken as 12.2. Non-probability purposive sampling technique was used for the selection of sample. Both male and female patients in ages between 30 and 60 years who fulfilled the 1987 American College of Rheumatology (ACR) criteria, were included. Patients with diagnosed cases of RA were recruited in this study. Patients with disabilities due to other conditions, history of current infection, and current primary inflammatory joint disease, and patients with comorbidities were excluded from the study. After sample selection, we used WHODAS-2.0 tool for scoring purposes. According to the result of the study conducted on validity and responsiveness of WHODAS-2.0 in RA patients, Cronbachs’ alpha of the total score was 0.91¹¹. This

tool assesses the level of health and disability and contains six important components of functionality with 36 items and can either be marked as 0, 1, 2, 3, and 4, in which 0 means ‘no difficulty’, 1 means ‘mild difficulty’, 2 means ‘moderate difficulty’, 3 means ‘severe difficulty’ and 4 is ‘extreme difficulty’, in performing different tasks mentioned in all six components of the WHODAS tool. In order to find the percentage of disability, we compiled percentage values of all six domains and scored disability in the range of 0-100% in which 0=No disability and 100=Extreme disability. In order to label the disability in mild, moderate, severe, and extreme forms, we further categorized 0-100% range in the following values i.e. (0%=No disability, 1-25%=Mild disability, 26-50%=Moderate disability, 51-75%=Severe disability, 76-100%=Extreme disability). According to the achieved results, the patients were then divided into categories depending on their level of disability. We ensured that the participants of the study are not emotionally and physically harmed and that all data collected shall not be disclosed to anyone. All the queries regarding the activities were answered to them. Descriptive analysis was conducted to determine the mean, standard deviation, and p value for age and body mass index. Data was analyzed using SPSS 22. Chi-square test was conducted to determine the association between gender of RA and overall disability. P-value less than 0.05 was taken to mean that we will reject the null hypothesis.

RESULTS

In our study, out of 143 patients, 52 (36.4%) were males and 91(63.6%) were females (Table 1). The targeted age group was 30-60 years of patient. The mean age of patients was 43.41 ± 8.605 SD (Table 2). We used WHODAS-2.0 questionnaire to figure out the impact of disability (Table 3 and 4). The mean of overall disability was 2.64 ± 0.737 SD

Table 1: Gender-based Frequency of Rheumatoid Arthritis Patients

Gender	Frequency (%)	P value
Male	52 (36.4%)	0.002
Female	91 (63.6%)	
Total	143 (100.0%)	

Table 2: Age-based Frequency of Rheumatoid Arthritis

Age in years	Frequency (%)
30-35	29 (20.27%)
36-40	35 (24.47%)
41-45	25 (17.48%)
46-50	33 (23.07%)
51-55	14 (9.79%)
56-60	15 (12.48%)

By applying chi-square test, we determined the association between gender and overall disability. We found that 18 (34.6%) out of 52 male patients presented with mild disability, 21 (40.38%) presented with moderate disability, 11 (21.1%) patients fell in severe disability, and 2 (3.84%) had extreme disability. In females, 54 (59.3%), 32 (35.16%), 5 (5.49%), 0 (0%) patients out of 91 reported with mild, moderate, severe, and extreme disabilities respectively with 0.002 p value.

with the age and gender adjusted general population. The result showed that HAQ scores were greater for those between 30 and 79 years old with rheumatoid arthritis (in which 17-45% were females and 7-32% were males) than those having the same age and gender in the general population. Thus indicating that more females patients with RA are disabled than men with RA. This result is in favour of the present study.

Table 3: Frequency of Disability in Functional Activities Among RA Patients

	Understanding and Communicating n (%)	Mobility n (%)	Self-care n (%)	Getting Along n (%)	Life Activities n (%)	Participation in Society n (%)
None	20 (14)	8 (5.6)	41 (28.7)	61 (42.7)	8 (5.6)	3 (2.1)
Mild	78 (54.5)	40 (28)	48 (33.6)	54 (37.8)	60 (42.0)	43 (32.2)
Moderate	26 (18.2)	42 (29.4)	26 (18.2)	16 (11.2)	64 (44.8)	67 (46.9)
Severe	16 (11.3)	41 (28.7)	22 (15.4)	9 (6.3)	7 (4.9)	30 (21)
Extreme	3 (2.1)	12 (8.4)	6 (4.2)	3 (2.1)	4 (2.8)	0 (0)

Table 4: Total Disability in Rheumatoid Arthritis Patients

0-100%	Frequency (%)
None	0 (0)
Mild	72 (50.3)
Moderate	53 (37.1)
Severe	16 (11.2)
Extreme	2 (1.4)

DISCUSSION

The current study was designed to determine the gender-based frequency and associated disability of rheumatoid arthritis. A previous cross sectional study was conducted in District Narowal, Pakistan in the year 2016 and likewise in a tertiary care hospital in Karachi in the year 2015, both of which also showed high prevalence of RA in females than males¹.

Another previous study in France in the year 2001, also concluded that RA is more common in females as compared to males¹².

In the present study, the second objective was to find disability associated with RA and the result showed that 50.3% patients had mild disability and more women were disabled than men which is in line with the previous studies. A study indicated that even in its early stages, rheumatoid arthritis has a profound effect on work status and causes work disability⁷. Another study held in China indicated that the occurrence of functional disability in patients with rheumatoid arthritis is common in China⁹. In Finland, a study compared the functional disability in rheumatoid arthritis patients

As the present study only sought to find out the frequency and disability associated with rheumatoid arthritis and had a small sample size, so further extensive researches with large sample sizes and studies to find out the impact of RA on quality of life are required in future. It is recommended that additional extensive researches are carried out to find the prevalence and impact of disability of RA. Studies are required to determine the association between RA and social or cognitive functioning. Further interventional studies are also needed to slow down the progress of this disease.

CONCLUSION

The results of our study show that prevalence of rheumatoid arthritis is more common in females than in males. Half of all patients had mild disability and overall disability was also found to be more common in females than in males.

Conflict of Interest: The authors declare that they have no conflict of interest.

Authors' contribution: RK: Carried out data collection, data entry, analysis and interpretation, wrote the introduction, results and conclusion and contributed to manuscript revisions; KY: Helped in literature search, wrote introduction, discussion and conclusion; AS: Worked on literature search, data collection, data entry and referencing, wrote the introduction; SJ: Supervised and critically revised manuscript, Wrote the introduction, data analysis. All authors conceptualized and designed the study.

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