

PREVALENCE OF RHEUMATOID ARTHRITIS IN YOUNG MALES

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Abstract:

Background: There has been a global increase in the burden of rheumatoid arthritis among adolescents and young adults, in recent decades, making it a significant public health issue.

Objective: To find the prevalence of rheumatoid arthritis in young males visiting the outpatient department of a tertiary care hospital.

Material and Methods: The Cross-sectional, took place at Department of Medicine, PAF hospital, Islamabad, from October 2024 to December 2024. A total of 200 young males aging between 18 to 40 years visiting the department due to any medical complain/accompanied with other patients were included in this study after taking their consent for participation. Early rheumatoid arthritis (ERA) criteria was employed to diagnose the presence of rheumatoid arthritis. Diagnostic investigations including comprehensive clinical assessments (clinical evaluations of joint symptoms) and serological markers (rheumatoid factor and Anti-Cyclic Citrullinated Peptide antibodies) were performed. Descriptive statistics were employed to present the prevalence of rheumatoid arthritis and related demographical, clinical and laboratory findings.

Results: The mean age of participants in this study was 31.62 ± 6.01 years. The prevalence of rheumatoid arthritis was found to be 9.5%. The evaluation of demographics characteristics and clinical features showed that the mean age of patients diagnosed with rheumatoid arthritis was 37.68 ± 1.97 years. Urban residential status (79%), sedentary and stressful occupational work (68.4%), morning stiffness ≥ 30 minutes (100%) and arthritis of hand joints (73.7%) were the most common among these patients.

Conclusion: The study revealed a notable prevalence of rheumatoid arthritis in young males. The urban residence settings, sedentary and stressful work, morning stiffness of joints specifically arthritis of hand joints underscored the need for screening in young males for early diagnosis.

Keywords: Dyspepsia, Stool Test, H. pylori, PPT, Prevalence.

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Introduction:

Rheumatoid arthritis (RA) is a chronic, progressive, systemic, autoimmune disorder characterized by chronic inflammation of the synovial joints leading to pain, stiffness, swelling, and potential joint deformity.¹ The overall global prevalence in latest updates is reported to be 0.5% to 1%. The global prevalence data, however, shows variations in disease prevalence among varying demographics groups, with a higher prevalence in females than the males and in older patients compared to young ones.² Presence of RA in young males is mostly overlooked due to the lower frequency of prevalence and atypical presentation compared to female patients. These

patients often present with distinct immunological markers and disease trajectories, challenging traditional diagnostic paradigms.³ This unique clinical profile arises a need for targeted screening protocols, advanced diagnostic techniques, and specific therapeutic interventions to improve early detection and thereby early management. Lack of awareness among healthcare providers further contributes to delayed diagnosis in this population segment.⁴

Multiple factors like genetic predisposition, environmental triggers, occupational exposures, and potential immunological variations contribute to the development of

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disease in young males. Earlier onset of RA has a potential risk of aggressive progression and higher disability risks, putting substantial long-term socioeconomic burden on the patients. RA can cause significant morbid conditions including reduced physical activity, impaired quality of life, and increased economic burden. Understanding the prevalence and clinical profile of RA in young males is, therefore, crucial for developing early and effective intervention strategies to meet the distinct challenges related to RA in this population segment.^{5,6} This tailored management strategies for young males may address the unique needs and challenges of this population segment. The lack of comprehensive research in this field is, however, the biggest hurdle in designing a focused approach to slow down the progression of RA in young males. The World Health Organization and regional health authorities has also emphasized the importance of comprehensive epidemiological research to understand the prevalence and dynamics of this autoimmune disease.^{7,8}

This occurrence of RA in young males remains particularly underexplored in regions such as South Asia, where cultural, genetic, environmental factors and increasing exposure to pollutants may influence disease patterns distinctively. Talking specific for Pakistan, tobacco use among males is prevalent, which potentially increases the risk of autoimmune diseases. Additionally, healthcare and diagnostic facilities are limited for our common population which enhance the chances of underreported cases of RA.^{9,10}

This study was therefore planned to find the prevalence of RA in young males visiting the outpatient department of our medical unit. The results of our study will help our local medical communities to design clinical screening protocols, targeted interventions and guidance in view of our local data.

Material and Method:

Study Design & Setting:

This cross-sectional study was conducted at the department of Medicine, PAF Hospital Islamabad, from October 2024 to December 2024, over a period of 3 months, after taking approval from the ethical committee of the hospital.

Sample size:

The sample size was estimated based on following assumptions: Prevalence=3.92%, Precision of 3.00%, and population size= infinite. Using a 95% confidence interval, the estimated sample size (n) = 161.¹¹

Sampling Technique:

A total of 200 young males were recruited using consecutive sampling technique.

Inclusion criteria:

Young males aged between 18 to 40 years visiting the outpatient department due to any medical complaint or accompanying other patients.

Exclusion criteria: Young males who were not willing to participate, those with pre-existing autoimmune diseases, having a history of joint trauma or surgery, or those undergoing immunosuppressive treatments.

The study purpose was explained to all participants, and written informed consent was obtained before their inclusion.

Data collection procedure:

Detailed of demographics, clinical symptoms, and family history of autoimmune diseases was recorded for all the participants. Diagnostic investigations included comprehensive clinical assessments and laboratory tests including clinical evaluations of joint symptoms, serological markers like RF (Rheumatoid factor) and anti-CCP (Anti-Cyclic Citrullinated Peptide) antibodies were performed. Additionally, suspected RA cases were forwarded for X-ray imaging of hands and feet to evaluate the joint erosions and deformities to provide additional diagnostic confirmation¹¹.

Early rheumatoid arthritis (ERA) criteria (which is in accordance with 1987 ACR and 2010 ACR/EULAR criteria) was employed to diagnose the presence of RA. The criteria defined RA by the presence of 3 or more of the following criteria: 1. morning stiffness ≥30 minutes; 2. arthritis of 3 or more joint areas; 3. arthritis of hand joints; 4. positive RF; 5. positive anti-CCP antibody.¹²

Data analysis:

Data were analyzed using SPSS version 25. Descriptive statistics were employed to present the demographics, medical history, prevalence of RA and related clinical and laboratory findings. Mean and standard deviations were calculated for continuous variables, while categorical variables were presented as frequencies and percentages.

Results:

The mean age of participants in this study was 31.62±6.01 years (ranging from 20-40 years). The demographic details and clinical history of study participants are shown in Table-I.

Table-I: Demographics and clinical history of study participants. n=200		
Demographics and clinical history		
Age (Mean±SD) years		31.62±6.01
Residential status	Urban n (%)	138 (69)
	Rural n (%)	62 (31)
Work status of occupation	Sedentary work n (%)	103 (51.5))
	Moderately physical work n (%)	81 (40.5)
	High physical activity n (%)	16 (8)
Family history of RA	Yes n (%)	21 (10.5)
	No n (%)	179 (89.5)
BMI	Under/normal weight (< 24.9 Kg/m2) n (%)	37 (18.5)
	Overweight (25 to 29.9 Kg/m2) n (%)	91 (45.5)
	Obese (≥ 30 Kg/m2) n (%)	72 (36)
Smoking status	Yes n (%)	61 (30.5)
	No n (%)	139 (69.5)
Presence of morbid conditions	Autoimmune and Inflammatory diseases n (%)	22 (11)
	Cardiovascular/metabolic diseases n (%)	39 (19.5)
	Osteoporosis n (%)	15 (7.5)
	Interstitial lung disease n (%)	7 (3.5)

Breakdown of diagnostic criteria of RA in these young males showed that morning stiffness was the most prevalent symptom followed by the arthritis of the hand joints. The overall prevalence of RA was found to be 9.5% as shown in Table-II

Table-2: Breakdown of diagnostic criteria and the prevalence of RA n=200		
Breakdown of diagnostic criteria and the prevalence of RA		
Presence of diagnostic criteria	Morning Stiffness ≥ 30 minutes n (%)	36 (18)
	Arthritis in ≥ 3 Joint Areas n (%)	19 (9.5)
	Arthritis at hand joints n (%)	26 (13)
	Positive RF positive n (%)	17 (8.5)
	Positive Anti-CCP Antibody n (%)	10 (5)
Prevalence of RA n (%)		19 (9.5)

The evaluation of demographics characteristics and clinical features of patients diagnosed with RA showed that the mean age of these patients was 37.68 ± 1.97 years. Urban residential status, sedentary and stressful occupational work, morning stiffness ≥ 30 minutes and arthritis of hand joints were the most common demographical characteristics and clinical features among these patients diagnosed with arthritis as shown in Table-III.

Table-3: Demographics characteristics and Clinical Features of Patients diagnosed with RA n=19	
Demographics characteristics	
Age (Mean $\pm$ SD) years	37.68 ± 1.97
Urban residential status n (%)	15 (79)
Sedentary and stressful occupational work n (%)	13 (68.4)
Family history of RA n (%)	9 (47.4)
Obesity (≥ 30 Kg/m ²) n (%)	12 (63.2)
Smoking history n (%)	11 (58)
Presence of co-morbid conditions n (%)	11 (58)
Clinical Features	
Morning stiffness ≥ 30 minutes n (%)	19 (100)
Arthritis in ≥ 3 Joint Areas n (%)	13 (68.4)
Arthritis of hand joints n (%)	14 (73.7)
Positive RF positive n (%)	12 (63.2)
Positive Anti-CCP Antibody n (%)	11 (58)

Discussion:

The mean age of participants in this study was 31.62 ± 6.01 years (ranging from 20-40 years). Breakdown of diagnostic criteria showed that morning stiffness was the most prevalent symptom (18%), followed by the arthritis of the hand joints (13%). The overall prevalence of RA rheumatoid arthritis in young males was found to be 9.5%. The evaluation of demographic characteristics and clinical features of patients diagnosed with RA showed that the mean age of these patients was 37.68 ± 1.97 years. Urban residential status (79%), sedentary and stressful occupational work (68.4%), morning stiffness ≥ 30 minutes (100%) and arthritis of hand joints (73.7%) were the most common

demographical characteristics and clinical features among these young male patients diagnosed with RA.

The exclusive work on the prevalence of RA specifically in young males is rare, however, different studies aiming to find the overall epidemiology of the disease have mentioned the gender and age based prevalence in the population under research.

Rudan I et al. studied the gender base prevalence of RA in low- and middle-income countries (LMICs), and mentioned that male prevalence of RA was 0.16% (95% CI: 0.11–0.20%), which was significantly lower than the female prevalence of 0.75% (95% CI: 0.60–0.90%) ($P < 0.0001$). With this gender base disparity, an estimated 3.16 million males were reported to be affected by RA in LMICs.¹³ Initial work on this topic in our region was conducted by Akhter E et al, who studied the prevalence of RA in India and Pakistan. The data related to Pakistan reported a male-to-female prevalence ratio of 1.7:1 in North Pakistan and 4:1 in South Pakistan. The median BMI of patients was 29 kg/m² and the dominant features were morning stiffness lasting an average of 68 minutes, rheumatoid nodules, and extra-articular manifestations, which affected the functional impairment of these individuals.¹⁴

Mohsin Z et al. conducted a study in Pakistan on the prevalence of RA in orthopedic outpatient department. The overall percentage of RA was reported to be 14.7%, while this was 3.92% in males in the study participants, where 40.8% of the patients were belonging to 18-40 years age group.¹¹ Hussain B et al. also explored the prevalence of RA in a population with a mean age comparable to our study (32.50 ± 15.30 years). Their findings revealed a significant RA prevalence of 14.1% among males, primarily affecting young adults. The researchers also highlighted that the incidence of RA has risen among middle aged people.¹⁵

Earlier and predominant clinical features of RA patients found in data extracted from the extensive work on arthritis by Fallon EA et al. were similar to our findings, where sedentary lifestyles, morning stiffness and hand joint involvement were mentioned as most frequent features.¹⁶ In a recently published research work by Eze B et al., the prevalence of RA in young males was relatively lower than females of same age group. Predominant clinical features reported in this research were also similar to findings of our research as persistent small joint involvement, morning stiffness lasting over an hour, elevated inflammatory markers (ESR, CRP), and positive serology for RF and Anti-CCP antibodies were most common features.¹⁷

The results of our study and the studies discussed above are further endorsed by the recently published research on the topic by Zhang M et al. and Koller-Smith L et al. which highlighted the increasing global burden of RA in young adults, with a consistent rise in both the incidence rate and disability-adjusted life years (DALY) from 1990 to 2019. This increase has been particularly notable in high socio-demographic regions, where young males have experienced a sharper increase in RA prevalence

compared to females, driven by higher age-standardized incidence rates (ASIR) and DALY rates. The features specifically prominent in these males, which can exacerbate inflammation and autoimmune activation thereby fueling the rise in RA cases, include smoking, occupational exposure to dust, poor dietary habits (high in fat, salt, and sugar), and obesity.^{18,19}

The primary limitation of this study was its single-center design, and the results can't be generalized at national level. Future research with a broader scope will be helpful in understanding RA prevalence in young males.

Conclusion:

The study reveals a notable prevalence of RA among young males, with significant clinical implications. The findings highlighted that urban population and sedentary occupational type along with stressful environments were prominent demographics, with characteristic symptoms like morning stiffness and hand joint arthritis. These results underscored the importance of early screening and comprehensive diagnostic approaches in identifying RA among young male population. These findings also suggested the need for further epidemiological research in this demographic section of population.

Disclaimer:

No

Conflict of interest:

No

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