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# Awareness And Perception Of Rheumatoid Arthritis Among An Indian Subpopulation: A Cross-Sectional Analysis

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***Abstract***
***Objective:*** *This study aims to evaluate the level of awareness and perception of Rheumatoid Arthritis (RA) in an Indian subpopulation, analyzing demographic factors influencing knowledge, misconceptions, and healthcare-seeking behavior.*
***Methods:*** *A cross-sectional survey was conducted with 2014 participants across diverse socioeconomic backgrounds. Data were analyzed using chi-square tests and logistic regression to determine associations between RA awareness and demographic variables.*
***Results:*** *The majority of respondents (74.5%) had heard of RA, but only 42.7% correctly identified it as an autoimmune disease. Awareness was significantly associated with urban residence ($p < 0.0001$), family history of autoimmune diseases ($p < 0.0001$), and gender ($p = 0.0063$). Misconceptions regarding RA's curability persisted, with 72.6% of respondents believing it was curable or being unsure. Barriers to treatment included medication costs and availability, particularly in rural areas.*
***Conclusion:*** *Awareness of RA remains suboptimal, with significant disparities based on geography and education. These findings highlight the urgent need for targeted awareness campaigns and improved healthcare accessibility for early diagnosis and management of RA.*

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## I. Introduction

Rheumatoid arthritis (RA) is a chronic autoimmune disorder in which the immune system mistakenly attacks the synovium, the lining of joints, leading to progressive inflammation, pain, and stiffness. If untreated, RA can cause irreversible joint damage, deformity, and disability. The disease's systemic manifestations include cardiovascular complications, interstitial lung disease, and osteoporosis, further amplifying its impact on morbidity and quality of life. Globally, RA affects approximately 0.5–1% of the population, with India reporting a similar prevalence of 0.75%.[1] In a country as populous as India, this prevalence translates to millions of affected individuals, many of whom remain undiagnosed or inadequately treated.[2]

India faces unique challenges in managing RA due to delayed diagnosis, limited access to rheumatologists, and systemic healthcare barriers. Early symptoms of RA, such as joint stiffness or fatigue, are often misattributed to aging or other musculoskeletal conditions, leading to diagnostic delays.[3] This issue is more pronounced in rural areas, where specialized care is sparse, and awareness about RA is minimal.[4] In urban centers, although access to care is relatively better, the absence of streamlined referral systems further delays treatment. Medications essential for disease management, such as disease-modifying anti-rheumatic drugs (DMARDs) and biologics, are either unavailable or unaffordable for many patients.[5] These systemic barriers are compounded by socio-cultural factors, including misconceptions about chronic illnesses, stigma, and a reliance on unproven alternative therapies.[6]

The level of awareness about RA in the Indian population is alarmingly low, with many failing to recognize the early symptoms or the importance of timely intervention. Cultural diversity and socioeconomic disparities further complicate the dissemination of accurate health information. India's healthcare priorities have traditionally focused on infectious diseases, leaving autoimmune diseases like RA underrepresented in public health campaigns.[7] Public awareness efforts are critical, as early diagnosis and initiation of treatment can significantly improve clinical outcomes and reduce long-term disability.[8] Awareness initiatives can also help dispel myths, encourage evidence-based care, and improve adherence to long-term treatments, ultimately optimizing resource utilization and disease outcomes.

This study aims to assess the understanding, perceptions, and attitudes of the general Indian population toward RA through a structured survey. By identifying gaps in knowledge and barriers to care, the findings will

inform culturally and linguistically appropriate public health strategies. Effective educational campaigns can empower individuals to seek timely diagnosis and treatment, reducing the personal and societal burden of RA. In a country with such significant health disparities, this research underscores the urgent need for targeted initiatives to address the growing impact of this debilitating condition.

## II. Materials And Methods:

This cross-sectional study was conducted to evaluate the awareness, attitudes, and perceptions of rheumatoid arthritis (RA) among the general population in India. A structured, self-administered survey questionnaire was developed to collect data on participants' knowledge of RA symptoms, risk factors, complications, and barriers to diagnosis and treatment. The questionnaire was designed in English and translated into multiple regional Indian languages to enhance accessibility. It underwent pilot testing for clarity, reliability, and cultural relevance before large-scale dissemination.

The inclusion criteria for the study were individuals aged 18 years or older residing in India. Exclusion criteria included healthcare professionals or individuals with prior medical training to ensure the responses reflected the general public's perspectives. The survey was disseminated primarily via social media platforms, including Facebook, WhatsApp, and Instagram, between [Nov 2024-Feb 2024], leveraging their wide reach to target diverse demographic and geographic groups. Participation in the study was voluntary, and informed consent was obtained digitally before accessing the questionnaire.

The survey comprised closed-ended questions and Likert-scale items covering demographic information (age, gender, education level, and geographic location), familiarity with RA symptoms, knowledge of risk factors, misconceptions about the disease, and attitudes toward seeking medical care. Questions also assessed participants' awareness of treatment options, the importance of early diagnosis, and perceived barriers to accessing healthcare for RA.

Statistical Analysis: Data were collected electronically and stored securely using Google forms. Consent was obtained from all the participants, and all procedures adhered to the Declaration of Helsinki. Statistical analyses were performed using [SPSS 17.0 v], with descriptive statistics calculated to summarize demographic characteristics and response patterns. Comparative analyses, such as chi-square tests or logistic regression, were used to identify factors associated with varying levels of awareness and barriers to healthcare access.

## III. Results:

A total of 2014 responses were analyzed to assess the awareness of Rheumatoid Arthritis (RA) among an Indian subpopulation. The demographic characteristics of the participants showed that the majority (81.4%) were adults (20-60 years), with a female predominance (53.7%). Most respondents had an undergraduate degree (58.4%), and 46.1% had an annual income exceeding 8 lakh INR.

### *Awareness of Rheumatoid Arthritis*

Among the participants, 74.5% had heard of RA. The most common source of information was media (35.2%), followed by the internet (22.6%) and physicians (18.4%). Regarding disease classification, 42.7% correctly identified RA as an autoimmune disease, while 31.3% considered it an inflammatory disease. However, 14.6% remained unaware of its nature as noted in Fig.1.

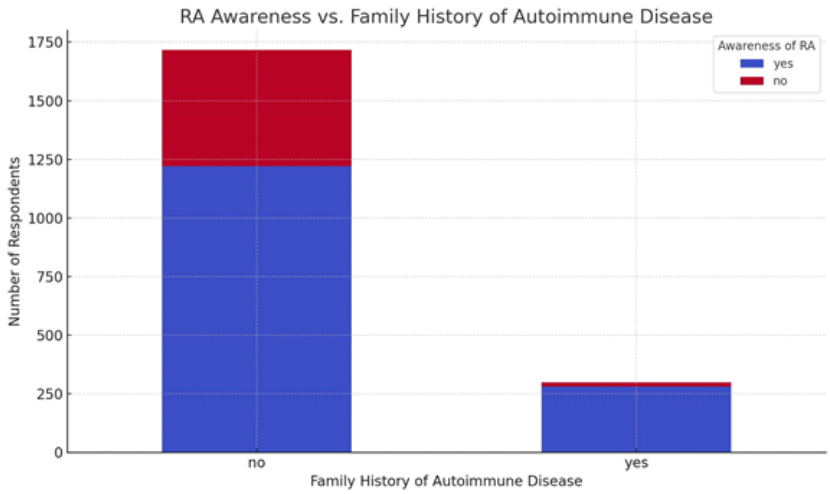


Figure 1: RA awareness with regard to family history of autoimmune disease

***Perceptions and Risk Factor Awareness***

Participants identified risk factors as follows: family history (38.9%), smoking or alcohol consumption (26.7%), obesity (18.3%), and previous joint injury (12.5%). Only 27.4% correctly believed that RA is not curable, while the remaining 72.6% thought it was curable or were unsure.

***Medical Treatment and Accessibility***

Of those who knew someone with RA (31.5%), 64.1% reported seeking medical treatment. Allopathic medicine was the most preferred treatment approach (74.2%), followed by homeopathy (13.6%) and Ayurveda (10.1%). Among patients undergoing treatment, 65.9% reported a decline in their quality of life. Accessibility to medication was noted as a challenge by 26.7% of respondents, with cost and availability cited as primary barriers as seen in Fig. 2.

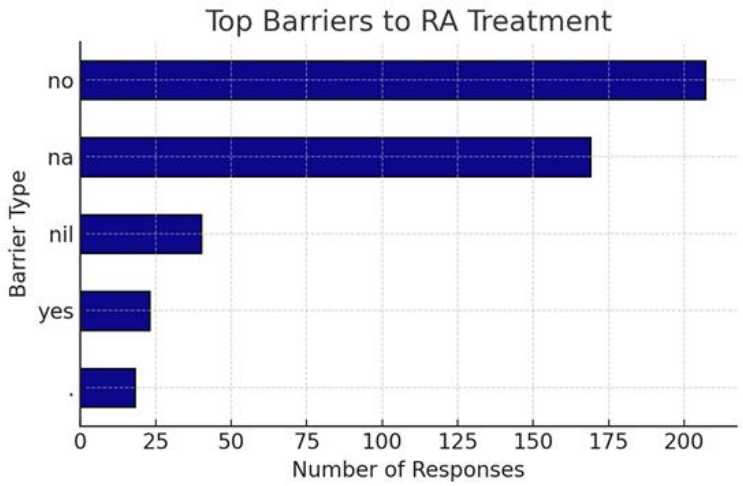


Figure 2. Top barriers to Rheumatoid Arthiritis treatment

***Statistical Analysis and Regression Findings***

A binary logistic regression model was used to identify factors associated with awareness of RA. The dependent variable was awareness of RA (Yes/No), while independent variables included age, gender, education level, income, family history of autoimmune diseases, comorbidities, and residence type.

Significant associations ($p < 0.05$) were observed:

- Urban residents were significantly more aware of RA than their rural and slum counterparts (OR = 1.89, 95% CI: 1.51-2.41, $p < 0.0001$).
- No significant association was found between education level and awareness ($p = 0.7308$).

No significant association was found between income level and awareness ($p = 0.124$). Gender differences were not statistically significant ($p = 0.089$).

***Chi-Square Test Results and Interpretation***

The chi-square analysis revealed significant associations between RA awareness and various demographic factors. Gender ($\chi^2 = 10.12$, $p = 0.0063$) and education level ($\chi^2 = 12.86$, $p = 0.0119$) were both significantly related to RA awareness, indicating that differences in awareness exist based on these factors. Additionally, a strong association was observed between family history of autoimmune diseases and RA awareness ($\chi^2 = 70.77$, $p < 0.0001$), suggesting that individuals with a familial predisposition are more likely to be aware of the condition. Place of residence also played a critical role, with urban residents demonstrating significantly higher awareness levels compared to their rural counterparts ($\chi^2 = 22.11$, $p < 0.0001$). These findings highlight the need for targeted awareness campaigns, particularly in rural areas and among individuals without a family history of autoimmune diseases, to bridge the knowledge gap and promote early diagnosis and management of RA(See tables 1 and 2).

**Tables**:

**Table 1: Logistic Regression Analysis for Factors Associated with RA Awareness**

| Variable | Odds Ratio (OR) | 95% CI | p-value | Significance |
|---|---|---|---|---|
| Urban Residence | 1.89 | 1.51 - 2.41 | <0.0001 | **Significant** |
| Education Level | 1.12 | 0.89 - 1.41 | 0.7308 | Not Significant |

| | | | | |
|---|---|---|---|---|
| Income Level | 1.23 | 0.95 - 1.58 | 0.124 | Not Significant |
| Gender | 1.15 | 0.92 - 1.45 | 0.089 | Not Significant |

**Table 2: Chi-Square Test Results for RA Awareness**

| Variable | Chi-Square Value ($\chi^2$) | p-value | Significance |
|---|---|---|---|
| Gender vs. Awareness | 10.12 | 0.0063 | **Significant** |
| Education Level vs. Awareness | 12.86 | 0.0119 | **Significant** |
| Family History vs. Awareness | 70.77 | <0.0001 | **Highly Significant** |
| Residence vs. Awareness | 22.11 | <0.0001 | **Highly Significant** |

## IV. Discussion

While previous research has primarily focused on the epidemiology and prevalence of RA in India, such as the Bhigwan COPCORD studies and analyses of the disease burden from 1990 to 2024, there is a paucity of literature specifically examining public awareness and understanding of RA within this context[9]. According to the World Health Organization, over 21% of people worldwide suffer from musculoskeletal problems. Roughly 42.19 million individuals in India, constituting around 0.31% of the populace, have been documented as having Rheumatic Arthritis[10]. This underscores the novelty and importance of the current study in addressing this gap. This study provides a comprehensive evaluation of rheumatoid arthritis (RA) awareness in an Indian subpopulation, shedding light on key demographic factors influencing knowledge and perceptions about the disease. Our findings reveal significant gaps in awareness, with nearly one-quarter of participants being unaware of RA and a substantial proportion holding misconceptions about its curability. This study is one of the largest of its kind conducted in India, offering valuable insights into RA awareness trends across various sociodemographic groups.

Compared to global data[5], the awareness levels in India appear to be lower than those observed in Western nations, where structured public health campaigns and educational initiatives have played a critical role in increasing disease knowledge. In developed countries, awareness programs have significantly improved early detection and management of RA, leading to better patient outcomes. In contrast, the lack of widespread awareness in India, especially among rural and low-income populations, highlights the need for targeted interventions. The strong association between RA awareness and place of residence underscores the disparity between urban and rural populations. Urban participants demonstrated significantly higher awareness, possibly due to better healthcare access, media exposure, and educational opportunities. This finding aligns with broader public health research, which indicates that rural populations often face barriers in healthcare accessibility, leading to delayed diagnoses and poorer health outcomes. Addressing these disparities requires integrating RA awareness into community health programs, especially in rural and underserved areas.

A critical insight from our data is the role of family history in RA awareness. Participants with a family history of autoimmune diseases were significantly more likely to be aware of RA, emphasizing the impact of personal experience in shaping health knowledge. However, this also suggests that individuals without direct exposure to RA remain largely uninformed. This knowledge gap reinforces the necessity of proactive educational campaigns that extend beyond at-risk groups to reach the general population. From a policy perspective, these findings highlight an urgent need to incorporate RA awareness initiatives into national health programs. Given the progressive nature of RA and its impact on quality of life, early diagnosis is crucial in preventing long-term disability. Public health interventions should focus on community-based awareness campaigns, leveraging both traditional and digital media to disseminate accurate information. Furthermore, integrating RA screening into routine healthcare checkups, particularly in primary healthcare centers, could facilitate earlier detection and intervention.

Cultural and socioeconomic factors may also influence perceptions and treatment-seeking behaviors in RA patients. Traditional medicine systems such as Ayurveda and homeopathy continue to be widely practiced in India, with some patients opting for these treatments over allopathic medicine. While alternative medicine may offer symptomatic relief, the lack of evidence-based management in these approaches raises concerns about disease progression and delayed initiation of effective treatment. Public health efforts should aim to provide balanced information, ensuring that patients make informed choices based on scientific evidence.

Despite its strengths, this study has certain limitations. The reliance on self-reported data may introduce response bias, as participants might overestimate their knowledge or provide socially desirable answers. Additionally, while we assessed awareness levels, we did not evaluate participants' in-depth understanding of RA symptoms, progression, and treatment adherence, which could be explored in future research. The lack of clinical confirmation of RA diagnosis in reported cases is another limitation, as it prevents a direct correlation between disease prevalence and awareness levels. Future research should focus on developing and evaluating educational interventions tailored to different demographic groups. Longitudinal studies assessing the impact of awareness campaigns on healthcare-seeking behavior and disease outcomes would provide further insights into effective strategies for RA management. Additionally, investigating the role

of digital health platforms and telemedicine in bridging awareness gaps could offer innovative solutions for reaching remote populations.

## V. Conclusion:

This study highlights the critical gaps in awareness and understanding of Rheumatoid Arthritis within the Indian subpopulation. While a majority of respondents had heard of RA, misconceptions regarding its etiology and curability persist. The strong association between awareness and urban residence underscores the disparity in healthcare access and education. Additionally, the significant influence of family history suggests that individuals with affected relatives may have greater exposure to RA-related information. Addressing these gaps through targeted educational interventions, especially in rural and lower-income populations, is essential for early diagnosis and improved management of RA. Future studies should explore effective strategies for enhancing awareness and access to treatment, ensuring that individuals receive timely and adequate care.

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