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Knowledge and Perception of Cardiovascular Disease Risks among Patients with Rheumatoid Arthritis

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Article Details

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ABSTRACT

Introduction: Rheumatoid arthritis (RA) is a chronic autoimmune disorder that has an approximate prevalence of 1% of the population, characterized by inflammation of the joints and the development of cardiovascular disease (CVD) risk. In addition, RA patients carry a negative prognosis of 5-10 years, longer than the general population because of the increased incidence of coronary artery disease, heart attacks, and strokes. Although CVD has been established as a complication of RA, patient awareness of such cardiovascular risks remains inadequate. The objective of this study is to review the literature on the awareness, knowledge, and attitudes towards CVD risk of rheumatoid arthritis patients. Methodology: A cross-sectional study spanning over six months was carried out with the 167 RA patients, mainly housewives, in the study. The participants were drawn from four rheumatology clinics in Karachi, and a structured questionnaire covering demographic details and characteristics, RA duration, treatment status, and CVD risk assessment for the patients surveyed. Clinical records were included, and the data was analyzed by SPSS version 29.0. Descriptive statistics and chi-square tests examined relationships of awareness and perception against key variables. Result: Most (82%) of the respondents were housewives and 95% were on RA treatment. The relationship between the duration of rheumatoid arthritis and the belief of weight management as a preventive measure of heart-related diseases was strong (p-value = 0.04). On the whole, differences in knowledge and attitudes toward the risks of CVD were noted. Conclusion: The study illustrates the lack of cardiovascular risk awareness in RA patients and emphasizes the need to perform better patient education in order to minimize cardiovascular complications in this high-risk group

INTRODUCTION

About 1% of persons suffer with rheumatoid arthritis, a chronic inflammatory disease. People who have RA usually have a five to 10 year reduced life expectancy, which is mostly due to high risk of Cardiovascular disease. In order to raise awareness, ongoing research attempts to improve knowledge of the pathophysiology and an assessment of Cardiovascular risk factors in Rheumatoid Arthritis.[i]

Higher risk of cardiovascular Disease (CVD), which includes illnesses like Coronary Artery Disease, myocardial infarction (MI), and stroke, is linked to rheumatoid arthritis (RA). Despite the well-established link between RA and CVD, there is growing concern about the insufficient awareness of cardiovascular risks among RA patients. The increased risk is exacerbated by the atypical presentation and earlier onset of cardiovascular events in this specific population.[ii,iii] Moreover, there was greater incidence of conventional cardiovascular risk factors such as Obesity, Diabetes, Smoking, Hypertension (HTN), and Physical Inactivity raises the risk of CVD in those with RA.[iv,v]

RA patients faces significantly increased risks of cardiovascular diseases (CVD) includes 82% increase in coronary artery disease, a 68% increase in myocardial infarction, and a 41% increase in stroke. CVD manifests atypically in RA patients, often at younger ages, potentially leading to delayed detection. The progression of Cardiovascular disease in RA is influenced by conventional risk factors and systemic inflammation, accelerating endothelial dysfunction and atherosclerosis. Early mortality from CVD remains a significant concern for patients, families, and healthcare professionals even with enhanced treatment approaches such as early Disease Modifying Anti-Rheumatic Drugs (DMARD) therapy. [vi]

This retrospective study aimed to evaluate extra-articular symptoms, co-morbidities related to Rheumatoid Arthritis (RA), and prevalence in RA patients attending a tertiary care hospital in Karachi. Out of 4900 patients, 633 patients (12.9%) had RA; the proportion of male to female patients was 1:4. The average age onset for both genders was 44.8 ± 13 years and 38.5 ± 12 years, respectively. Co-morbidities were present in 35.38% of RA patients; cardiovascular conditions, such as 13.79% hypertension and 6.6% ischemic heart disease, were the most common co-morbidities. The rheumatoid factor was positive in 85.05% people with hypertension and 88.09% people with Ischemic Heart Disease. The most prevalent extra-articular symptom, interstitial lung disease (1.577%), was identified in 3.47% of cases. The study found a significant proportion of RA patients, mostly female, in the hospital's

rheumatology clinic, and it implies that although the frequency of extra-articular symptoms was lower than in Western countries, rheumatoid factor can be a predictor of cardiovascular disease risks in RA patients. [vii]

Among the most difficult elements of the patient-health interaction is communicating future risk and necessity for preventative intervention. Patients' understanding of their risk for getting CVD is critical for the successful execution of CVD prevention measures based on lifestyle-modifiable risk variables. [viii] Such initiatives to measuring CVD risk in RA patients has been established, they require significant work to effectively integrate them into clinical rheumatology. These initiatives includes healthcare professional education, written materials, as well as online and group counselling for individuals. [ix]

Underestimation or overestimation of one's own cardiovascular disease risk might impede CVD prevention, early identification, and treatment. Effective CVD prevention may require assessing patients' perceptions of risk and educating them about the real risk. [x]

This research aims to explore existing literature to evaluate the awareness, knowledge, and perception on the risk of cardiovascular disease among RA patients. Our aim is to identify gaps in understanding and pave the way for targeted interventions to enhance preventive care and outcomes for individuals with RA who face an elevated risk of cardiovascular events.

THE SIGNIFICANCE OF RESEARCH:

The significance of the research on the awareness and perceptions of the cardiovascular disease risks among the patient with rheumatoid arthritis lies in ability to provide valuable insights for enhancing patient education, refining preventive strategies, and ultimately reducing the impact of cardiovascular complications in this specific population. This study has the potential to guide more targeted healthcare interventions, aiming to improve cardiovascular health outcomes for individuals with rheumatoid arthritis.

RATIONALE OF RESEARCH

It is crucial to conduct this cross-sectional study on the perception and prognosis of increased risk of cardiovascular disease among Rheumatoid Arthritis (RA) patients. Considering the increased cardiovascular risks associated with RA, gauging patient awareness is pivotal for tailored preventive interventions, addressing risk factors, and improving comprehensive healthcare. This research has broader implications for chronic disease management and offers insights that could inform public health initiatives.

RESEARCH QUESTION

How patients with RA are well-informed and aware regarding the risks linked to cardiovascular diseases and how does this awareness correlate with their cardiovascular health and risk factors?

HYPOTHESIS

Individuals diagnosed with rheumatoid arthritis (RA) exhibiting heightened understanding and awareness regarding cardiovascular disease risks are expected to experience better cardiovascular health outcomes and a diminished occurrence of related risk factors.

LITERATURE REVIEW

OR Ghosh-Swaby et al. investigates the knowledge and the perception of CVD risk among individuals having RA. Despite being at elevated CVD risk, a significant portion of the RA population (73% to 97%) is unaware of this risk, particularly those with more CVD risk factors. Misconceptions about CVD are usual, with mostly underestimating their genuine risks. The findings emphasize the need for tailored interventions to improve CVD awareness in individuals with RA, considering both system- and individual-level barriers. The study concludes that addressing these issues is crucial for successful implementation of strategies to enhance screening of the CVD and management in this population. [xi]

Boo S et There a significant information and awareness gap regarding risk of cardiovascular disease in individuals with RA. Despite population's known increased risk of Cardio-Vascular Disease, a cross-sectional study of 200 RA patients in a hospital connected with a South Korean university reveals notable gaps in knowledge. The study utilizes Framingham Risk Score to find out the actual 10-year Cardio-vascular Disease risk and identifies physical inactivity as the most prevalent risk factor, with 77% of patients lacking regular exercise. Notably, research exposes widespread misconceptions, with 19.5% of patient, underestimating and 41% overestimating their CVD risk. Patients underestimating risk exhibit a higher prevalence of risk, coupled with the lowest knowledge levels about CVD. This demonstrates a critical need for focused educational initiatives to dispel particular myths, with an emphasis on the effects of anti-inflammatory drugs and physical inactivity. The study underscores the importance of implementing preventive measures, such as tailored education and routine exercise interventions, especially when diagnosing Rheumatoid Arthritis, to mitigate elevated risk of CVD in this patient population. [xii]

Teoh BC, et al. investigates the rheumatoid arthritis (RA) patient's baseline knowledge of the

risk of cardiovascular disease (CVD), focusing on the factors such as smoking, HTN, hyperlipidemia, exercise, and anti-inflammatory drug usage. While patients had adequate baseline knowledge of various aspects of CVD risk, inadequacies were found, specifically understanding the quantity of exercise required to minimize CVD risks and the risk associated with anti-inflammatory medicines in RA. The findings show a significant improvement in total knowledge scores immediately following educational intervention, with the most significant improvements in understanding the anti-inflammatory drugs and their link with Cardiovascular disease risks factor, as well as the relationship between the number of flares and CVD risks. However, three months after the intervention, total knowledge scores decreased, while they remained considerably higher than the baseline. Importantly, the study found no significant relationships between demographic parameters or cardiovascular risk factors and RA patients' understanding of CVD risk. Result stresses RA patients' low baseline knowledge of CVD risk and the efficacy of an informative leaflet intervention in boosting their comprehension, particularly in RA-specific risk domains. [xiii]

Banerjee S Et al investigates the substantial gap in patient awareness and counseling in clinical practice, proposing the need for multimodal approaches, including website development, symposiums, and involvement of healthcare providers at various levels, to address this unmet need effectively. The findings underscore significance of enhancing patient knowledge and communication strategies to build the awareness gap regarding CVD risk in RA. [xiv]

Johri N et al. examine the higher risks of cardiovascular disease CVD in people with RA, the study finds a 50%–70% increase over the general population. It emphasizes the intricate nature of understanding how rheumatology contributes to preventing CVD, emphasizing the crucial roles of inflammatory burden and the cardiotoxic effects of antirheumatic therapy. The review highlights a significant correlation between the usage of anti-inflammatory drugs and an increased risk of dying young. Although the burden of CVD in RA is acknowledged, managing the condition effectively proves to be a challenging undertaking that calls for cooperation amongst rheumatologists, cardiologists, internists, and primary care physicians in order to give the best possible care. Overall, the review critically assesses pertinent studies and proposes potential directions for future endeavors intended to enhance the way RA patients' risk for CVD is managed.[xv]

Dijkshoorn B. et al highlights the fact that compared to the general population, patient having rheumatoid arthritis (RA) have an increased risk of acquiring cardiovascular diseases (CVD).

The presence of systemic inflammation significantly contributes to an increased risk of atherogenesis, with almost half of the overall CVD risk attributed to conventional cardiovascular factors. The use of anti-rheumatic medications plays a crucial role in mitigating CVD risk by addressing inflammation. Despite guidelines recognizing this heightened risk, the actual implementation of screening in clinical practice is often insufficient, resulting in many RA patients having undiagnosed and untreated risk factors. The review underscores the persistent elevation in CVD risk among RA patients, even with advancements in anti-inflammatory treatments, emphasizing the imperative need for mandatory screening to align their Cardiovascular risk with that of the general population. [xvi]

Avina-Zubieta JA et al compares the general population, with the patient rheumatoid arthritis (RA) had significant 48% risk of cardiovascular disease. The analysis also reveals 68% risk of MI, 41% risk of Cerebrovascular accidents (CVA), and 87% risk of CHF. Notably, there is considerable heterogeneity observed across all primary analyses, underscoring the intricate nature of assessing CVD risk in RA patients. Subgroup analyses reveal that inception cohort studies are the sole group not demonstrating a significantly increased risk of CVD, suggesting potential variations in risk across different study designs. Overall, these findings highlight the heightened cardiovascular risk in RA, emphasizing the significance of considering sample and cohort characteristics when estimating risk. [xvii]

Desai SS et al. examines management of the Cardiovascular Risk Factors (CRFs) in patients with Rheumatoid Arthritis (RA) by rheumatologists and Primary Care Physicians (PCPs). Findings reveal that PCPs are more actively engaged in addressing Obesity, Blood Pressure (BP), and Lipid levels in Rheumatoid Arthritis (RA) patients compared to rheumatologists. Surprisingly, PCPs handle these CRFs more often in patients with diabetes than in patients with RA, and even more commonly in the General Population (GP) than in patients with RA. Interestingly, PCPs are more likely than GPs or RAs to discuss weight management with diabetes patients who had an increased BMI. The findings show that PCPs handle risk factors in RA patients less than the other groups, and rheumatologists had a lower propensity to recognize and prevent CRFs than PCPs. Given the heightened cardiovascular risk associated with RA, the study emphasizes the necessity for more proactive management of CRFs in these patients by physicians. [xviii]

Peter MJ et al focuses attention to the importance of assessing cardiovascular (CV) risk in those who have Psoriatic Arthritis (PsA), Ankylosing Spondylitis (AS), and Rheumatoid Arthritis

(RA). The research advocates for annual CV risk assessments for all RA patients, considering it for those with AS and PsA as well. The identified CV risk factors management is recommended in accordance with local guidelines or utilizing the SCORE function when specific guidelines are lacking. Ten suggestions for managing the risk of CVD are included in the results; the recommendations' strengths vary across RA, which presents more compelling evidence for heightened CVD risk, and AS and PsA. To effectively lower the overall CV risk in these patient populations, the study emphasizes the critical necessity for both i.e. to robust suppression of the inflammatory process and an adequate management of CRFs. [xix]

Weijers JM et al mentioned in their study that according to a new European League Against Rheumatism (EULAR) policy, all patients with Rheumatoid Arthritis (RA) should assessed their risk for Cardiovascular Disease (CVD) at least once in every five years. A literature review suggests that RA patient's use of CVD risk factor screening is underutilized in primary and secondary care settings. The view goes on to describe how the EULAR Cardiovascular Disease Risk Management (CVRM) guideline was successfully used in a Dutch region. Through a collaborative effort involving rheumatologists and general practitioners, 72% of 628 RA patients underwent a lipid profile assessment within the past 5 years. Routine quality control measures, including sending reminder letters to GPs, substantially increased CVD risk assessments to 88%. This collaborative model provides a useful example of how to effectively control cardiovascular risk for people with RA by matching therapy to EULAR guidelines. [xx]

Barber CE et al examined risk factors of cardiovascular disease (CVD) in patients with rheumatoid arthritis (RA) at the time of diagnosis and the start of biologic treatment, it was shown that smoking, obesity, hypertension, and dyslipidemia are common. A review of quality improvement (QI) measures related to cardiovascular disease reveals a range of performance gaps, including significant deficiencies in formal documentation of CVD risk assessment, communication with primary care physicians regarding the risk associated with RA, and counseling for patients who are overweight. Diabetes and lipid screenings were reported at 67% and 69%, respectively, indicating room for improvement. Conversely, efficient documents of the intent to match corticosteroids demonstrated high performance. The study highlights the critical deficiencies in risk management and the urgent need of improvements in quality, particularly in conveying the increased risk of cardiovascular disease (CVD) in individuals with RA and organizing cardiovascular treatment across rheumatology and primary care. [xxi]

Bartels CM et al investigated the opinions of rheumatologists, PCPs, and patients about CV disease's prevention in patients with Rheumatoid Arthritis (RA), the findings indicate that both patients and providers believe preventive care relies on recognizing and addressing risk factors, which is not consistently done. While all Rheumatologist were aware of the danger of RA-CVD, almost half of patients and PCPs were not. Due to perceived role limits, rheumatologists frequently communicated with PCPs about CVD risk through clinic notes, despite the difficulties they encountered in methodically identifying risk variables. PCPs proposed that arranging PCP visits could enhance the risk management, and was well received by all participants. The study emphasizes the need for improved recommendations, patient engagement, and system-based initiatives for preventive treatment by highlighting major gaps and improvement possibilities in the identification and risk management in RA patients across various levels. [xxii]

Boo S et al conduct a study that involves 208 rheumatoid arthritis (RA) patients in Korea aimed to assess in what way Cardiovascular risk factors affect perceived cardiovascular disease (CVD) risk and compare the real and perceived 10-year CVD risk. The actual risk was estimated using the Systematic Coronary Risk Evaluation (SCORE), and adherence to European League Against Rheumatism guidelines was used to assess goal attainment. According to the results, 13.9% of RA patients had a high risk of CVD, and most of them underestimated that risk. Antihypertensive or lipid-lowering medication use, as well as a family history of CVD, enhanced the odds of perceiving a high risk of CVD. Notably, a significant number of cases did not fulfill the objectives of the preventative guidelines. The study emphasizes the significance of early management for RA patients with an elevated CVD risk to effectively achieve guideline goals and reduce future CVD risk. [xxiii]

John H et al explains the development and validation of two versions of Heart Disease Fact Questionnaire for Rheumatoid Arthritis (HDFQ-RA), tool that is used to assess patient having RA knowledge regarding Cardiovascular disease (CVD). After undergoing cognitive interviewing and pilot testing, the questionnaire—which included both generic and RA-specific questions—was divided into two comparable forms. Psychometric validation involving 130 RA patients established reliability between the parallel forms, with consistent median scores and no significant differences observed. Test–retest stability revealed consistent median scores over a 2-week period. Patients who had knowledge about heart disease or were using cardiovascular drugs scored greater, according to a known group comparison. The study concludes that the

HDFQ-RA was a dependable and valid tool for assessing CVD knowledge in RA patients, suitable for use in educational interventions and progress tracking in clinical and research settings. [xxiv]

John H et al underscores the crucial yet often overlooked necessity for patient-centric education regarding the cardiovascular aspects of rheumatoid arthritis (RA) within existing RA patient education initiatives. The authors emphasize how urgently it is to develop carefully thought out and assessed educational programs that target the complex lifestyle and medication choices that are necessary to maximize cardiovascular health in individuals with RA. For such interventions, they suggest that a psycho-educational behavioral approach in conjunction with appropriate written information may be the most successful strategy. These programs might be implemented using the current infrastructure, including the network of clinical nurse experts in rheumatology, perhaps with initial assistance from health psychologists if they are available. The article makes a strong case for addressing this unmet educational need for patients with RA within the larger clinical and scientific community of rheumatology. [xxv]

A Naranjo et al as part of the QUEST-RA project, conducted a study that analyzed data from 4,363 rheumatoid arthritis (RA) patients across 15 countries. The results revealed that the sample's prevalence of myocardial infarction was 3.2%, that of stroke was 1.9%, and that of any cardiovascular disease event was 9.3%. Traditional risk variables related to CVD, not including obesity and sedentary state, demonstrated substantial correlations with cardiovascular disease morbidity. Significantly, a lower risk of cardiovascular disease was linked to extended use of RA therapies, such as methotrexate, leflunomide, sulfasalazine, glucocorticoids, and biologic medicines. This suggests that these drugs may safeguard RA patient's cardiovascular health, emphasizing the significance of considering both traditional risk factors and RA-specific therapy when assessing cardiovascular risk in this population. [xxvi]

AG Semb et al addresses the existing evidence gap in preventing cardiovascular disease (CVD) and managing clinical outcomes for individuals with RA. Despite uncertainties in treatment thresholds and outcomes specific to RA-related CVD, The authors stress that among RA patients who satisfy general population criteria for CVD risk reduction. It is imperative to implement evidence-based treatments, such as blood pressure management, loss of weight, quitting smoking, and lipid-lowering medications. They encourage the evaluation and treatment of cardiovascular disease (CVD) risk in RA patients in compliance with guidelines for

the general public, and they recognize the ongoing development of educational programs and conclusive research on CVD outcomes in this specific population. The proposed early strategies for integrating Cardiovascular disease risk assessment in rheumatology consultations involve documenting and utilizing general population risk calculators to evaluate CVD risk factors, sending high-risk patients to cardiology or primary care, and educating patients on methods to reduce their excess CVD risk. [xxvii]

H Ye et al. conducted a comprehensive review and meta-analysis of 13 randomized controlled trials (RCTs) involving 967 patients with rheumatoid arthritis (RA) in order to evaluate the impact of aerobic exercise on various outcomes. The results indicate that engaging in aerobic exercise has a positive and safe effect on individuals with RA, resulting in improvements in functional ability, pain relief, increased aerobic capacity, and enhanced scores on the Sit to stand test. These findings suggest that incorporating aerobic exercise into the overall management of RA could be beneficial. Nevertheless, the authors acknowledge limitations in both the quantity and quality of the studies included, underscoring the imperative for future research to employ higher-quality studies to further substantiate these conclusions.[xxviii]

JK Cooney et al stresses the significance of exercise for individuals with rheumatoid arthritis (RA), highlighting its numerous benefits. RA adversely affects joints and overall health, leading to issues such as joint pain, fatigue, and an elevated risk of heart problems. The article discusses "rheumatoid cachexia," which denotes accelerated muscle mass loss. It underscores that exercise can counteract muscle loss, enhance mobility, and reduce the risk of heart problems without exacerbating RA symptoms. The authors recommend incorporating both aerobic and resistance exercises into the regular care routine for everyone with RA. Additionally, they emphasize the importance of understanding the perspectives of individuals with RA and healthcare providers regarding exercise to optimize the effectiveness of these programs.[xxix]

RS Taylor et reviewed a comprehensive meta-analysis, Analyzing 48 trials with 8,940 participants reveals that exercise-based cardiac rehabilitation has a very positive effect on those with coronary heart disease. This form of rehabilitation significantly diminishes the all-cause mortality risk, particularly from heart-related issues, while also resulting in notable enhancements in cholesterol levels, blood pressure, and the likelihood of smoking cessation. Importantly, the findings do not reveal an elevated risk of heart attacks or the necessity for

procedures like revascularization. The study underscores that the positive effects of cardiac rehabilitation on overall survival are consistent across various rehabilitation programs and exercise regimens. In simpler terms, engaging in exercise-based cardiac rehabilitation is conclusively established as highly beneficial for individuals dealing with heart disease.[xxx]

METHODOLOGY

A questionnaire was created and used to ask patients (who meet the inclusion criteria) pertinent questions about the subject. The patients were informed of the goal of the questionnaire and their agreement was obtained.

POPULATION OF INTEREST

The specific goal of the study is those with rheumatoid arthritis (RA) diagnoses. This encompasses a diverse group of RA patients, including individuals of varying ages, genders, and disease durations. The aim is to comprehensively capture awareness levels across a range of demographic and clinical characteristics through the administration of the questionnaire.

INCLUSION CRITERIA

- The study invites adults aged 18 years and older to participate.
- Eligible individuals must have a confirmed diagnosis of rheumatoid arthritis.
- Those willing to voluntarily give informed consent are welcome to join the research.

EXCLUSION CRITERIA

- Exclusions pertain to individuals with rheumatic conditions other than rheumatoid arthritis.
- Ineligible are participants unwilling or unable to actively engage in the study.
- Individuals with cognitive impairments affecting effective questionnaire responses are not included.

STUDY DESIGN

Cross-sectional study designs allow for the simultaneous examination of the variables of interest (knowledge and perception of cardiovascular disease risks) in a specific population at a specific point in time, which is why the research on "Knowledge and Perception of Cardiovascular Disease risks among Patients with Rheumatoid Arthritis" used one. Without changing any factors, this kind of study offers a snapshot of the existing state of affairs.

STUDY SETTING

1. Jinnah Hospital

2. Ashfaq Memorial Hospital
3. Abbasi Shaheed Hospital
4. Mamji Hospital

STUDY DURATION

Six months after the synopsis was approved.

SAMPLE SIZE

For our cross-sectional study, "Knowledge and Perception of Cardiovascular Disease Risks among Patients with Rheumatoid Arthritis," we have 167 people in our sample size, which gives us the chance to gather a sizable amount of data from our target population at one time.

SAMPLING TECHNIQUE

Simple Random Sampling

SAMPLING SELECTION

The research were employ a random sampling method to select participants. An assortment of individuals diagnosed with rheumatoid arthritis (RA) were compiled from different sources, including clinic records and RA support groups. The selection process was unbiased and random, ensuring representation from diverse demographic groups. The inclusion criteria includes the patient with a confirmed diagnosis of Rheumatoid Arthritis, considering the age of not less than 18 years. Participation were voluntary, with consent obtained before administering the questionnaire.

OUTCOME MEASURES

The research analyzes questionnaire responses from participants to gauge their understanding and impression of the cardiovascular risk factors linked to RA.

VARIABLES

DEPENDENT VARIABLE

The study's main objective was to assess how well-informed and perceptive people with rheumatoid arthritis are about the risks of cardiovascular disease.

INDEPENDENT VARIABLE

In the study, independent factors include things like age, gender, education level, work status, awareness of diseases, medication adherence, comorbidities, disease activity, and functional disability.

DATA COLLECTION PLAN

Patient recruitment was occur in rheumatology clinics or hospitals, with participants providing

informed consent. Trained personnel administered a detailed questionnaire covering demographic information, disease history, medication details, and assessments of cardiovascular disease risk knowledge and perception. Clinical data was supplemented from medical records. A simple random sampling method were employed for unbiased participant selection, and the sample size were determined statistically. The plan underscores a systematic and ethical approach to achieve the research objectives within a defined timeframe, emphasizing the importance of robust data collection and analysis methods.

DATA ANALYSIS PROCEDURE

The research on "Knowledge and Perception of Cardiovascular Disease Risks among Patients with Rheumatoid Arthritis" employs a systematic approach as part of its analysis strategy. The study employed descriptive statistics to provide an overview of participant characteristics, including demographic data and information pertaining to the condition. Inferential statistics were employed to investigate connections between awareness, perception of cardiovascular risks, and relevant variables. Potential confounding factors, such as age, gender, and disease severity, were taken into account. Statistical tests, like chi-square or regression analyses, were utilized to evaluate the significance of these connections. Reporting confidence intervals and p-values conveys the level of certainty in the findings. The data analysis plan underscores a thorough examination of the collected data, ensuring a rigorous and systematic approach to derive meaningful conclusions regarding the awareness and perception of cardiovascular risks among rheumatoid arthritis patients.

RESULT

STATISTICAL ANALYSIS

The data was entered and analyzed in SPSS version 29.0.

Descriptive for categorical variables such as gender, marital status, occupation, under-treatment of rheumatoid arthritis, duration of RA diagnosis in group and knowledge or perception of cardiovascular disease items was reported as frequencies and percentages.

Demographics for the quantitative variables such as age was reported as mean ± standard deviation. To check the normality factor on age Shapiro Kolmogorov was applied.

To check the significant association between duration of RA diagnosis in group with knowledge and perception of cardiovascular disease items chi square test was applied.

Bar graphs and pie charts was also reported for categorical variables such as occupation, under-treatment of rheumatoid arthritis and in comparison, between duration of RA diagnosis with

gender and marital status.

A p-value of less than 0.05 was deemed significant by us.

In all, our study comprised 167 patients with rheumatoid arthritis. As seen in (Fig-1) there were 137 (82%) housewives, 26 (16%) working patients, and only 4 (2%) students among the total number of patients. Moreover, under treatment for Rheumatoid Arthritis was 158 (95%) patients while only 9 (5%) patients not taken any treatment as shown in (**Fig-2**).

FIGURE 1 OCCUPATION STATUS

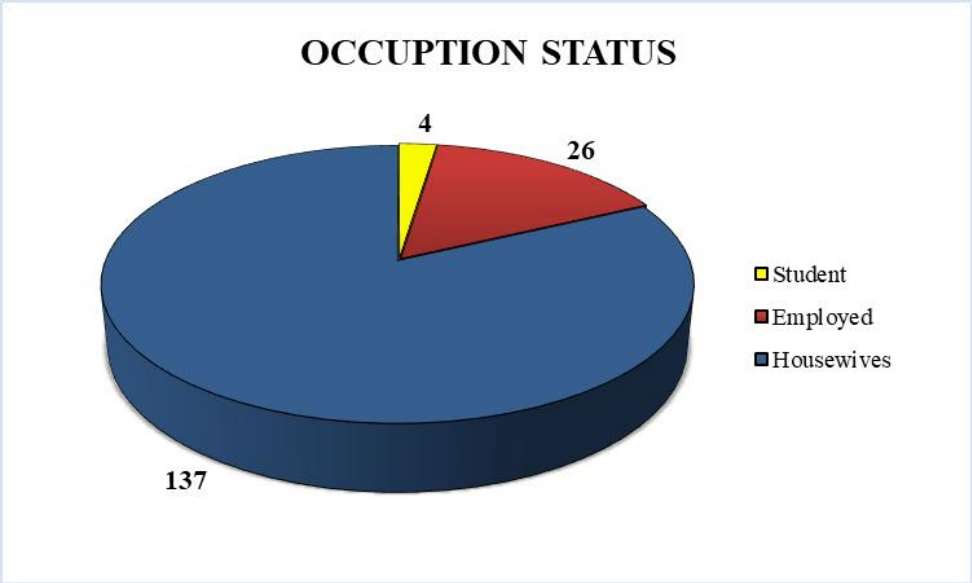
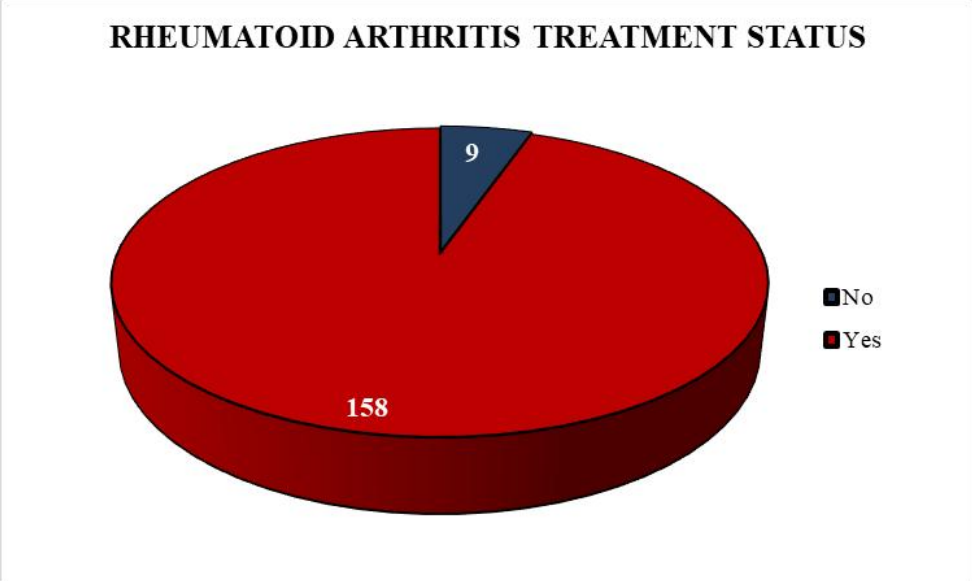


FIGURE 2 STATUS OF UNDER-TREATMENT FOR RHEUMATOID ARTHRITIS



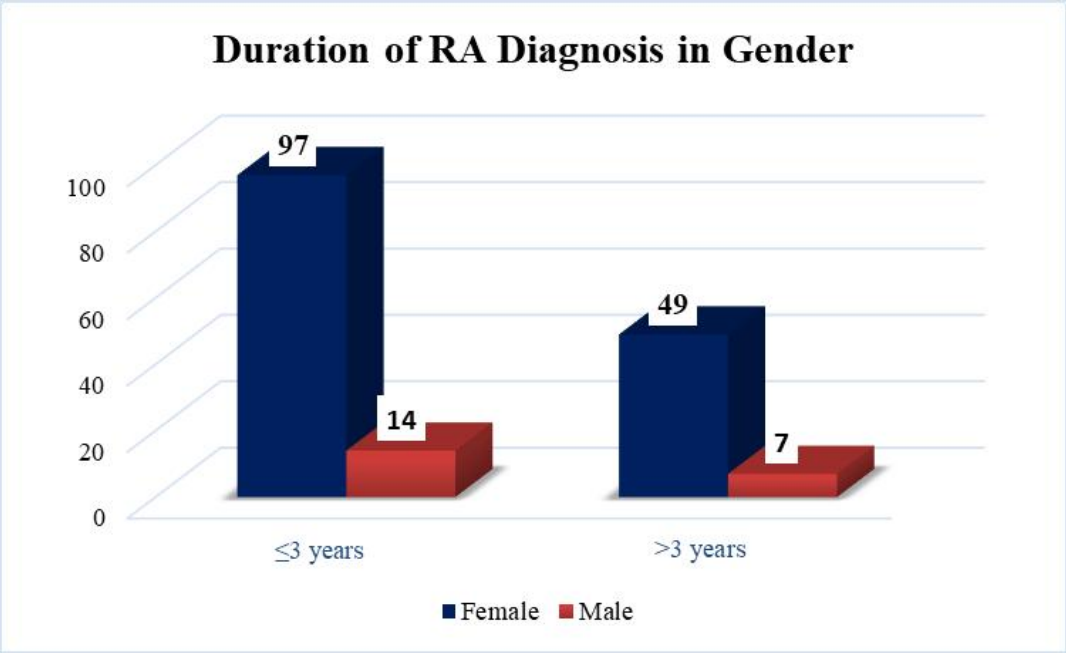
According to our results, the patients' average age was 40.5 ± 11.9 standard deviations. We observed that 146 patients (87%) were female, and only 21 patients (13%) were male. Furthermore, our data estimate that in all the patients most of them were married with 157 (94%), 8 (5%) were single and one was divorced and one was widowed. The duration of rheumatoid arthritis was seen in years, majority of the patients with 111(66%) was in group ≤3 years of duration while 56 (33%) of the patients was in group >3 years of duration. All the values described in (**Table-1**).

TABLE 1 BASELINE CHARACTERISTICS

Baseline Characteristics	**n (%)**
Gender	
Female	146(87.4%)
Male	21(12.6%)
Age; Mean ± Sd	40.5 ± 11.9
Marital Status	
Married	157(94%)
Single	8(4.8%)
Widowed	1(0.6%)
Divorced	1(0.6%)
Duration of a RA Diagnosis	
≤3 years	111(66.5%)
>3 years	56(33.5%)

Our data reveals that the majority of individuals with rheumatoid arthritis were in the group with a duration of ≤3 years, based on the distribution of gender within the group, out of 111; ninety-seven were females and fourteen patients were male. Moreover, in >3 years of duration of rheumatoid arthritis, out of 56; forty-nine were females and seven were males. As shown in (**Fig-3**).

FIGURE 3 DURATION OF RHEUMATOID ARTHRITIS DIAGNOSIS IN GENDER



Distribution of marital status with duration rheumatoid arthritis group, our data reported that the majority was married, out of 157; hundred and four were in less than an equal of 3 years of duration of RA and fifty-three patients were in more than of 3 years of duration of RA. In single category total were 8 patients; out of total, seven were in less than an equal of 3 years of duration of RA and only one patient was in more than of 3 years of duration of RA. In both widowed and divorced category only one patient was in more than 3 years of duration of RA. .

In (**Table-2**), we have seen the association of awareness of cardiovascular risks with duration of rheumatoid arthritis groups. 49(71%) of the patients were knew when they have heart disease whose rheumatoid arthritis duration was in group ≤3 years while 20 (29%) patients were in >3 years, however, 62(63%) of the patients were not knew when they have heart disease whose rheumatoid arthritis duration was in group ≤3 years while 36 (38%) patients were in >3 years with an insignificant (**p-value=0.29**). Most patients agreed that smoking increased one's risk of heart disease.; out of 102 (69%) patients was in group ≤3 years while 46 (31%) patients in group >3 years of duration of RA with slightly insignificant (**p-value=0.06**). Moreover, majority patients were response 'yes' on statement that high cholesterol was high chances of heart disease; out of 102 (70%) patients were in ≤3 years of duration while 39 (30%) and there were no significant association (**p-value=0.09**). Most of the patients had no idea about the HDL was high, more likely to develop heart disease; out of total,

93 (65%) of the patients was in group ≤3 years while 51 (35%) patients in group >3 years of duration of RA with an insignificant (**p-value=0.19**). Additionally, the majority of patients were unaware that working out at a gym or taking an exercise class lowers one's risk of heart disease, and the results were marginally significant (**p-value=0.05**). Most patients know that rheumatoid arthritis patients who manage their weight are less likely to develop heart problems and were response 'yes'; out of, 89 (71%) of the patients was in group ≤3 years while 37 (29%) patients in group >3 years of duration of RA with significant (**p-value=0.04***). Likewise, most patients said "yes" when asked if giving up smoking would reduce the risk of heart disease in people who had rheumatoid arthritis, although the difference was insignificant. (**p-value=0.30**). Additionally, the majority of patients did not know and responded "no/don't know" with negligible association when asked whether exercise is recommended for people with rheumatoid arthritis since it can harm their joints. (**p-value=0.93**). Furthermore, rheumatoid arthritis flare-ups, or episodes of severe inflammation, raise the risk of heart disease; majority of the patients in our data were response 'no/don't know' and there were no significant association with the duration of rheumatoid arthritis (**p-value=0.49**). All the values described in detail in the below table.

Table 2 ASSOCIATION OF KNOWLEDGE AND PERCEPTION ITEMS WITH DURATION OF RHEUMATOID ARTHRITIS DIAGNOSIS

Knowledge and Perception of Cardiovascular Risks Characteristics	**Duration of RA Diagnosis**		
	≤3 years	**>3 years**	**P-values**
A person always knows when they have heart disease			
No/Don't Know	62(63.3%)	36(36.7%)	0.29
Yes	49(71%)	20(29%)	
A person who smokes is more likely to develop heart disease			
No/Don't Know	9(47.4%)	10(52.6%)	0.06
Yes	102(68.9	46(31.1%)	

	%)		
Keeping blood pressure under control will reduce a person's chances of developing heart disease			
No/Don't Know	9(60%)	6(40%)	0.57
Yes	102 (67%)	50(32.9%)	
A person with high cholesterol is more likely to develop heart disease			
No/Don't Know	21 (55.3%)	17(44.7%)	0.09
Yes	90 (69.8%)	39(30.2%)	
If your 'good' cholesterol (HDL) is high you are more likely to develop heart disease			
No/Don't Know	93 (64.6%)	51(35.4%)	0.19
Yes	18 (78.3%)	5(21.7%)	
Only exercising in a gym or in an exercise class will lower a person's chances of developing heart disease			
No/Don't Know	56 (60.2%)	37(39.8%)	0.05
Yes	55 (74.3%)	19(25.7%)	
Eating fatty foods does not affect blood cholesterol levels			
No/Don't Know	84 (66.7%)	42(33.3%)	0.92
Yes	27 (65.9%)	14(34.1%)	
A person with diabetes is more likely to develop heart disease			

No/Don't Know	22 (64.7%)	12(35.3%)	0.80
Yes	89 (66.9%)	44(33.1%)	
A person with Rheumatoid arthritis can reduce their chance of heart disease by keeping their weight under control			
No/Don't Know	22 (53.7%)	19(46.3%)	0.04*
Yes	89 (70.6%)	37(29.4%)	
A person with Rheumatoid arthritis can reduce their chance of heart disease by stopping smoking			
No/Don't Know	15 (57.7%)	11(42.3%)	0.30
Yes	96 (68.1%)	45(31.9%)	
People with Rheumatoid Arthritis should not exercise because it can damage their joints			
No/Don't Know	74 (66.7%)	37(33.3%)	0.93
Yes	37(66.1 %)	19(33.9%)	
Anti-inflammatory medications such as diclofenac or ibuprofen, taken by patients with rheumatoid arthritis may increase the chance of heart disease			
No/Don't Know	67(67%)	33(33%)	0.85
Yes	44 (65.7%)	23(34.3%)	
Having lots of inflammation ('Flares') of rheumatoid arthritis adds to increased chance of heart disease			

No/Don't Know	79 (68.1%)	37(31.9%)	0.49
Yes	32 (62.7%)	19(37.3%)	

UNSTRUCTURED CONCLUSION POINTS

The majority of patients with rheumatoid arthritis (RA) were married women, according to the study's findings, with a prevalent duration of RA disease within the ≤3 years group. Despite an overall awareness, knowledge, and perception of cardiovascular diseases among the patients, all investigated items displayed insignificant p-values, indicating a lack of statistically significant associations. But there was one notable exception: the assumption that people with rheumatoid arthritis can reduce their risk of heart disease by controlling their weight was found to be significantly correlated with the length of time they had RA, especially in certain time periods. This implies a possible relationship between weight management knowledge and how it affects the risk of heart disease in the setting of rheumatoid arthritis duration groups.

DISCUSSION

Patients with rheumatoid arthritis have a significantly increased risk of cardiovascular diseases (CVDs), such as coronary artery disease, myocardial infarction (MI), and stroke. (RA). Concerns over the low awareness and understanding of CVD risks in this population are raised by the unique presentation and earlier onset of cardiovascular events in RA patients. This heightened risk, coupled with potential delays in detection due to unusual manifestations, underscores the urgent need for targeted interventions and improved patient education to effectively mitigate the impact of cardiovascular complications. The primary objective of this cross-sectional observational study was to investigate the awareness, knowledge, and beliefs of individuals with rheumatoid arthritis (RA) regarding their risk of cardiovascular disease. The study attempts to identify important knowledge gaps by means of an extensive evaluation of the body of existing literature, laying the groundwork for the creation of focused interventions. The primary focus is on enhancing preventive care strategies and overall outcomes for RA individuals facing an elevated risk of cardiovascular events. Insights gleaned from patient perspectives will play a pivotal role in shaping informed, patient-centric healthcare interventions.

RA, affecting approximately 1% of adults, results in a reduced life expectancy, mostly as a result of a higher risk of cardiovascular disease (CVD). In order to raise awareness, ongoing

research projects aim to improve understanding of the pathophysiology and assessment of cardiovascular risk factors in RA. [xxxi]

It is commonly known that RA is linked to a higher risk of CVD, which includes illnesses including coronary artery disease, myocardial infarction, and stroke. However, concerns are growing regarding insufficient awareness of cardiovascular risks among RA patients. Unusual presentations and early initiation of cardiovascular events exacerbate the higher risk. Furthermore, DM, obesity, HTN, smoking, physical inactivity, and diabetes mellitus all increase the risk of cardiovascular disease (CVD) in people with RA. [xxxii]

Retrospective study aimed to assess the prevalence, demographics, co-morbidities associated with RA, and extra-articular symptoms in RA patients in Karachi at a tertiary care hospital. 12.9% had RA, with a male-to-female ratio of 1:4. study found cardiovascular conditions, includes hypertension (13.79%) and ischemic heart disease (6.6%), as the most common co-morbidities out of 4900 patients. The prevalence of extra-articular symptoms, particularly interstitial lung disease, was lower than in Western countries. According to the study, RA patients' chance of developing cardiovascular illness may be predicted by their rheumatoid factor. [xxxiii]

Effective communication of future risk and the need for preventative intervention remains a challenge in patient-health interactions. Patients' understanding of their risk for CVD is crucial for successfully executing prevention measures based on lifestyle-modifiable risk factors. While initiatives to measure CVD risk in RA patients have been established, integrating them effectively into clinical rheumatology requires significant effort. These initiatives include healthcare professional education, written materials, as well as online and group counseling for individuals. [xxxiv]

Underestimation or overestimation of one's cardiovascular disease risk may impede prevention, early identification, and treatment. Effective CVD prevention may necessitate assessing patients' perceptions of risk and educating them about the actual risk. The research aims to explore existing literature to evaluate the awareness, knowledge, and perception of cardiovascular risk among RA patients. In order to improve preventive care and outcomes for people with RA who are at an increased risk of cardiovascular events, it was necessary to identify knowledge gaps and open the door for focused interventions.

The significance of the research lies in its ability to provide valuable insights for enhancing patient education, refining preventive strategies, and ultimately reducing the impact of

cardiovascular complications in this specific population. A cross-sectional study on perception of RA patient's perceptions or considerate of the risk factors of cardiovascular disease was essential. Particular the greater cardiovascular risks linked to RA, gauging patient awareness is pivotal for tailored preventive interventions, addressing risk factors, and improving comprehensive healthcare. This research has broader implications for chronic disease management and offers insights that could inform public health initiatives.

The main focus of the study was how knowledgeable and aware RA patients are about the risk of getting cardiovascular related diseases and how this knowledge connects to their cardiovascular health and risk factors. The hypothesis posits that individuals diagnosed with RA, exhibiting heightened understanding and awareness regarding cardiovascular disease risks, are expected to experience better cardiovascular health outcomes and a diminished occurrence of related risk factors.

In this study, 167 patients were participated with rheumatoid arthritis (RA). Majority of the patients were housewives (82%), followed by employed individuals (16%), and students (2%) (Fig-1). Furthermore, 158 patients (95%) were under treatment for Rheumatoid Arthritis, while only 9 patients (5%) had not taken any treatment (Fig-2).

Baseline characteristics of 167 patients having RA were analyzed, primarily housewives, under treatment for RA. The average age was 40.5 ± 11.9, with a significant female majority (87.4%). (Tab-1)

The duration of RA diagnosis was categorized into ≤3 years and >3 years, with a higher proportion in the former group. The association of awareness of cardiovascular risks with the duration of RA revealed interesting patterns. (Fig-3)

High cholesterol is thought to be one of the risk factors for heart disease, 70% of patients having ≤3 years duration of RA believed in its association, while 30% did not. However, the p-value of 0.09 indicated no significant association. Similar patterns were observed for other perception items, such as the effect of exercise, weight control, and smoking cessation on reducing the chances of heart disease. (Fig-4)

These findings suggest that awareness and perceptions regarding cardiovascular risks vary among RA patients, and the duration of RA may influence their knowledge. Interestingly, individuals with shorter RA durations showed a strong conviction in the protective effects of weight control against heart disease. (p-value=0.04*). It is crucial to consider these variations in perceptions when designing targeted interventions to improve cardiovascular health

outcomes in RA patients. (Tab-2)

This study clarifies how individuals with rheumatoid arthritis (RA) view and comprehend the risks associated to CVD. The cross-sectional study involving 167 RA patients, predominantly housewives, emphasizes the need for targeted interventions to address the limited awareness of cardiovascular risks in this population. By focusing on patient perspectives and employing a cross-sectional approach, the study enriches our understanding of the intricate dynamics involved. Significant associations between RA duration and cardiovascular awareness underscore the importance of tailored interventions to enhance preventive care and mitigate the impact of cardiovascular complications. This research contributes valuable insights to chronic disease management, suggesting the necessity of refining patient education strategies to reduce the overall impact of cardiovascular complications in RA patients facing an elevated risk of cardiovascular events. Moving forward, future research could explore the effectiveness of these interventions in improving cardiovascular outcomes and delve deeper into the interplay between RA duration, awareness, and patient outcomes for a more comprehensive understanding of cardiovascular risk in this specific population.

LIMITATIONS

The use of self-reported data introduces the possibility of recall bias and social desirability bias, as participants may not accurately recall or truthfully report their awareness levels.

The study's concentration on particular hospitals in particular regions may restrict the applicability of findings to a variety of RA patient populations, possibly omitting variances in awareness.

The study's reliance on specific healthcare settings may introduce sampling bias, perhaps limiting the finding's ability to be applied to a larger population of individuals with rheumatoid arthritis (RA).

STRENGTH

- Despite limitations, the study included a diverse sample of RA patients, incorporating various demographic and clinical variables, contributing to the external validity of the findings.
- The structured questionnaire covered a wide range of factors, offering a holistic understanding of participants' awareness, including demographics, disease history, medications, and assessments of cardiovascular risk knowledge.
- The study addresses a critical gap in understanding cardiovascular risks in RA patients,

highlighting the importance of research in improving preventive care and overall outcomes for this specific population.

- Strict inclusion criteria ensure that the participants are diagnosed with RA, enhancing the study's internal validity by focusing specifically on the target population.

RECOMMENDATION

- Future research should adopt longitudinal study designs to capture the dynamic nature of awareness and cardiovascular outcomes in RA patients over an extended period.
- Enhancing generalizability, future studies could involve multiple healthcare centers and diverse geographic locations, providing a more comprehensive understanding of RA patient experiences.
- Supplementing self-reported data with objective measures, such as clinical assessments and biomarkers, can enhance the reliability and validity of study findings.

Implementing targeted patient education programs focusing on cardiovascular risks in RA could improve awareness and promote preventive measures, potentially reducing the impact of cardiovascular complications.

CONCLUSION

In conclusion, the study intended to assess the perceptions and understanding of CRFs between individuals with rheumatoid arthritis (RA). Targeting a diverse population, the research took age, gender, and length of disease into consideration. It was carried out through a cross-sectional study involving 167 RA patients. Utilizing a structured questionnaire, the study examined participant's knowledge of the risks of CVD linked to RA and examined a number of clinical and demographic factors. The findings revealed notable patterns in participants' awareness, with significant associations between RA duration and cardiovascular knowledge and perception. The majority of participants were housewives, and under-treatment for RA was prevalent. The study also assessed participants' knowledge on specific CVD risk factors, highlighting areas of awareness and gaps. The research contributes valuable insights for tailored interventions to enhance preventive care and reduce the impact of cardiovascular complications in RA patients. Future investigations may delve deeper into the effectiveness of such interventions and further explore the interplay between RA duration, awareness, and patient outcomes in addressing cardiovascular risks.

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CONFLICT OF INTEREST

Authors have no conflicts of interest related to this work.

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