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Original Research Article

Socio-Demographic Determinants in the Evolution of Spectrum of Rheumatic Diseases: A Cross-Sectional Study in a Tertiary Level Hospital in Bangladesh

Nuzhat Nuery[a]*, Md Arifur Rahman Chowdhury[b], Md Aminul Alam[c], Mohammed Kamruzzaman[d], ASM Minhaj Uddin[e], Md Mamunul Abedin[f]

[a] Medical Officer Physical Medicine and Rehabilitation Department, Shaheed Suhrawardy Medical College Hospital, Dhaka
[b]Assistant Professor, Physical Medicine and Rehabilitation Department, Rangpur Medical College, Rangpur
[c] Assistant Professor, Physical Medicine and Rehabilitation Department, National Institute of Traumatology and Orthopedic Rehabilitation, Dhaka
[d] Assistant Registrar, Physical Medicine and Rehabilitation Department, Kurmitola General Hospital, Dhaka
[e] Registrar, Physical Medicine and Rehabilitation Department, Shaheed Suhrawardy Medical College Hospital, Dhaka
[f] Assistant Registrar, Physical Medicine and Rehabilitation Department, Shaheed Suhrawardy Medical College Hospital, Dhaka

***Correspondence to:**
Dr. Nuzhat Nuery

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Abstract: ***Background:*** The word "rheumatism" or "rheumatic disease" refers to a variety of ailments that cause persistent, frequently fluctuating pain in the joints and/or connective tissue. At least 100 diverse illnesses are included by the term "rheumatism," which does not define any one disorder. The study was created to investigate the range of rheumatic disease among patients presenting as outpatients in the Physical Medicine & Rehabilitation department of a tertiary level hospital due to the dearth of research on this topic. ***Objective*****:** To find out the socio-demographic determinants in the evolution of Spectrum of Rheumatic diseases in a tertiary level hospital in Bangladesh. ***Methods*****:** This cross-sectional study was carried out at the Physical Medicine and Rehabilitation department of the DMCH for six months. The study sought to enroll patients who had musculoskeletal problems or systemic symptoms that would indicate rheumatic illness. After meeting the requirements, patients were accepted. Each respondent provided written informed consent, and those who refused to engage in the study or undertake additional research were not included. Use of SPSS 16 was made for data analysis. ***Results*****:** With a gender split of 35.7% male and 64.3% female, the mean age of the respondents was 46.3612.25 years (males were 5011.68 years old and women were 44.1912.03 years old). The majority of our respondents (31%) came from rural areas. The proportion of patients who live in urban areas and urban slum areas is nearly similar (27.6% vs. 28.6%), and the remaining 12.8% are city dwellers. Patients who were low-income were the majority (43.5%), followed by middle-class patients (36.5%) and upper-class patients (20.1%). 54.17% of cases had articular symptoms, 43.23% had degenerative joint conditions, and 10.94% had inflammatory joint disorders. ***Conclusion*****:** In this tertiary care hospital, patients had arthritic conditions that were both non-inflammatory and inflammatory, had soft tissue rheumatism, had bone abnormalities, and had multi-system disorders.

Keywords: Rheumatic Disease, Inflammatory, Economic Status, Socio Determinants.

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Introduction

Rheumatic diseases (RDs) seemed to be the most frequent source of chronic health issues both globally and in Bangladesh.[1] It is the most common disease in the world, affecting somewhere from 11% to more than 50% of people.[2] Many of them are

more common in adult females than in males, and the disease phenotypes are acquired through a variety of diverse combinations of genetic and environmental risk factors.[3,4] Accelerated mortality and significant long-term physical disability (46–54%) are results of rheumatic disorders and their numerous related comorbidities.[5] The prevalence of functional disability brought on by rheumatic diseases is reported to be 24% in Bangladeshi rural and urban groups, notwithstanding the paucity of available data. However, the frequency of long-term impairment related to rheumatic disorders among the general adult population of affluent countries ranges from 2.8 to 8.2%.[1,6] Thus, Rheumatic illnesses place a heavy burden on families, society, and the healthcare system.[7,8] More than 100 different conditions are classified as rheumatic diseases, including rheumatoid arthritis (RA), osteoarthritis (OA), autoimmune diseases like systemic lupus erythematosus (SLE), ankylosing spondylitis (AS), osteoporosis, back pain, gout, fibromyalgia, tendonitis, and metabolic bone diseases like gout and Paget's disease.[10] Rheumatoid arthritis (RA) and osteoarthritis are the two most prevalent rheumatic illnesses (OA).[9,10] Despite the dearth of information, however, OA of the knees, nonspecific low back pain, lumbar spondylosis, fibromyalgia, and soft tissue rheumatism are reported as the most frequent rheumatic illnesses in Bangladesh.[1] All of these chronic illnesses have a number of things in common, including the tendency to damage and inflame joints, as well as the potential to affect internal organs, which is linked to progressive impairment and may even be the cause of death. They cannot be efficiently prevented, and their aetiology is still not fully understood.[11] The integration of a patient's symptoms, physical examination findings, and the results of diagnostic tests is necessary to establish a diagnosis of rheumatic disease and early diagnosis is crucial to attaining effective therapy and an improved prognosis of rheumatic disorders.[12, 13] Numerous additional studies are required because there is currently insufficient information available to accurately describe the epidemiology of rheumatic diseases in our nation. Because of this, the study was created to examine the range of rheumatic disorders among the Bangladeshi population. Rheumatic illnesses are a set of chronic ailments that affect the musculoskeletal system. These diseases have both personal and societal effects, resulting in lower quality of life for patients and their families, lost productivity, and higher expenses for healthcare. One of the primary causes of an increase in diagnoses is also a higher life expectancy. There is a lack of epidemiological data on rheumatic disease in Bangladesh and a scarcity of qualified experts in the topic. Therefore, it is unknown how much these diseases are burdening society. Furthermore, instances are frequently misdiagnosed or underdiagnosed, which increases patient suffering and raises the cost of healthcare. For effective patient planning and care, it is crucial to understand the disease spectrum as well as the burden of rheumatic disease in the physical medicine and rehabilitation department. In order to inform the health care system to take appropriate actions to prevent morbidities and early mortality as well as improve the quality of patients afflicted by rheumatic disease, the study's purpose was to monitor the spectrum of rheumatic diseases in a tertiary hospital in our nation.

Objective

To find out the socio-demographic determinants in the evolution of Spectrum of Rheumatic diseases in a tertiary level hospital in Bangladesh.

Material And Methods

Study Design: It was a cross-sectional study.
Place of Study: Department of Physical Medicine and Rehabilitation (PMR) in Dhaka Medical College Hospital.
Study Period: 23/3/2018 to 22/9/2018.
Study population: Patients who visit the outpatient clinic have either musculoskeletal issues or systemic symptoms that may be related to rheumatoid arthritis.
Sampling Method: Convenient sampling.

Inclusion Criteria

Age: > 21 years and <70 years (as the prevalence of musculoskeletal complaints more at this age range), both sex, Clinical symptoms-sign consistent with Rheumatic disease.

Exclusion Criteria

Severely ill patients, not willing to participate in the study, mentally challenged people, Subject who are unconscious.

Data Processing and Analysis

All collected information were registered, documented and analyzed in the statistical program Statistical Package for Social Science (SPSS) version 16.0. The data (regarding clinical symptoms and sign, duration of disease were systematically described, summarized, and presented through descriptive statistics (frequency and percentage). Data were shown as mean, range or value and 95% confidence interval (95% CI) and frequency and percent. Chi square test was done for qualitative variable analysis. In addition, Student t-test was done for normally distributed quantitative variables to measure mean and standard deviation. To estimate the association chisquare test were considered. Test of significance was set as p value <.05.

Results

This study comprised 384 instances with rheumatoid arthritis that all matched the inclusion criteria and received medical care from the Physical Medicine and Rehabilitation (PMR) Department at the Dhaka Medical College Hospital. Figure 1 shows that the mean age at presentation was 46.3612.25 years (male=5011.68 years and female=44.1912.03 years), with the youngest patient being 21 years old and the oldest patient being 68 years old. The fifth decade had the highest frequency of rheumatic disease (23.7%), followed by age 50 (39.9%).

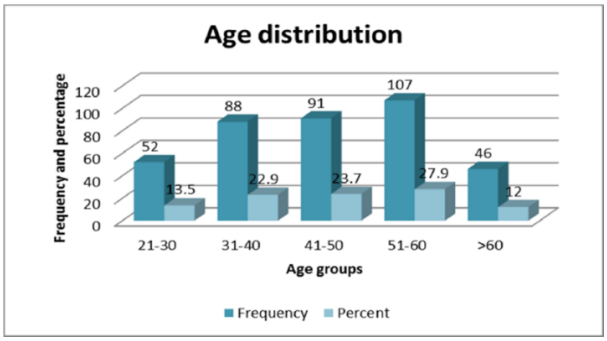


Figure 1: Distribution Of Patients According to Different Age Groups (N=384)

This study consisted of 137 (35.7%) males and 247 (64.3%) females giving a male-to female ratio of 1:1.80. Figure 2 shows a pie chart of the gender distribution.

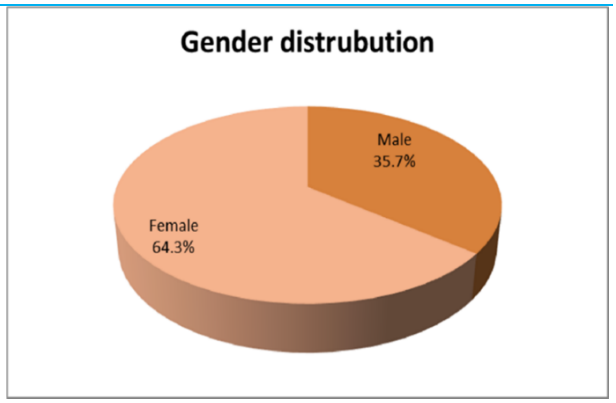


Figure 2: Gender Distribution of Patients (N=384)

Figure 3 showed about one-third of our patients were from rural area (31%). Almost equal number of patients lives in urban area and urban slum area (27.6% vs 28.6%) and the remaining 12.8% are residents of the city.

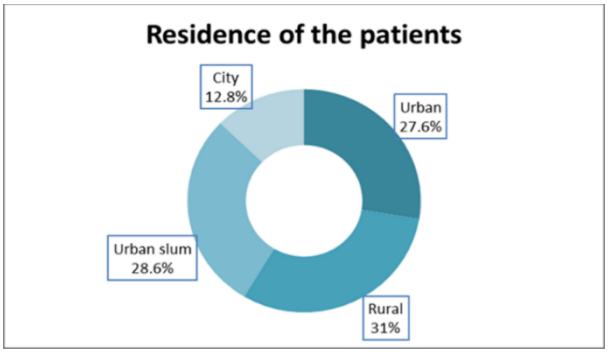


Figure 3: Residence Of the Patients (N=384)

A bar chart in figure 4 shows that majority of our study patients had attended secondary school (38.5%) and 38.3% were graduates (university graduate 19% vs technological institute graduate 19.3%). Only twenty-two patients (5.7%) were illiterate.

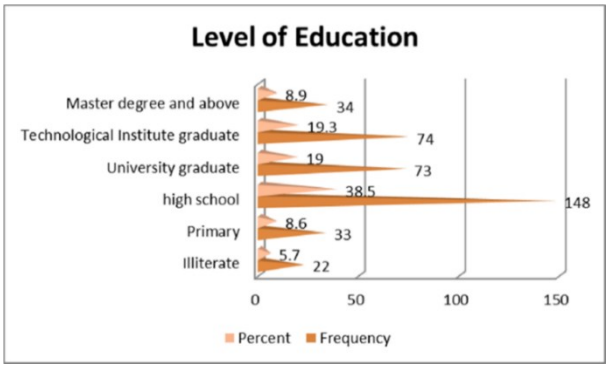
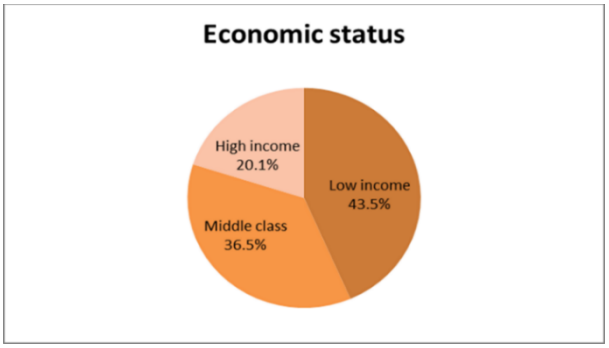


Figure 4: Distribution of Patients According to Different Level of Education

Figure 5 shows that regarding economic status; low-income patients occupied the major part (43.5%) followed by the middle class (36.5%) and higher class (20.1%).



Almost three in five patients were married (62%) whereas 12.2% were separated or divorced and 11.7% were widowed and the remaining 14.1% were unmarried as shown in figure 6.

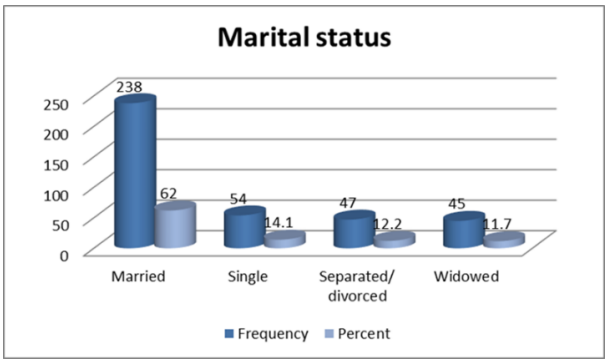


Figure 6: Distribution of Patients According to Marital Status (n=384)

Table 1 shows that around 54.17% of the cases presented with articular symptoms, Soft tissue rheumatism (42.45%), Disorder of bone (2.6%) and multi-system disorders (0.78%) presented in the patients. Among them articular disorders have been seen mostly in the patients found in this study.

Table 1: Major Categories of Rheumatic Disorders of Patients

Major categories	Frequency	Percent of total	Male (%)	Female (%)
Articular disorders	208	54.17	67 (32.21)	141 (67.79)
Soft tissue rheumatism	163	42.45	66 (40.49)	97 (59.51)
Disorder of bone	10	2.6	3 (30)	7 (70)
Multi-system disorders	3	0.78	1 (33.33)	2 (66.67)

The most frequent lesion was lumbar spondylosis (28.92%), followed by cervical spondylosis (24.70%), and peripheral osteoarthrosis (28.31). Due to the presence of lumbar root involvement characteristics (such as sciatica-like distribution, a positive Lasegue's sign, and/or indicators of neurological deficit) and the lack of radiological evidence of spondylosis, TB, cancer, etc., 17.47% of patients were classified as PLID cases. Only a small number of cases resulted in MRI confirmation (Figure 7). With the exception of PLID, females had a considerably greater frequency of non-inflammatory articular diseases (p=0.003).

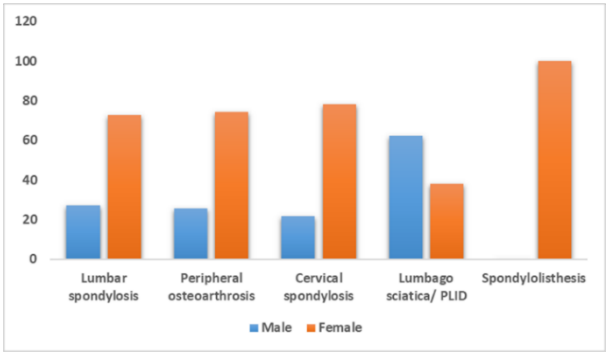


Figure 7: Distribution Of Various Non-Inflammatory Articular Disorders.

Rheumatoid arthritis (RA) (4.16%) was the second most prevalent inflammatory arthritis, followed by seronegative spondyloarthritis (SpA) group (all combined). Undifferentiated SpA (9.52%) and ankylosing spondylitis (AS) were the two seronegative diseases that were most prevalent (30.95% of all inflammatory arthritis). Reactive arthritis was only found in one patient (2.38%) (Table 2).

Table 2: Distribution Of Various Inflammatory Articular Disorders

Name of diseases	Male (%)	Female (%)
Rheumatoid arthritis	12.5	87.5
Ankylosing spondylitis	53.84	46.15
uSpA	25	75
Reactive arthritis	100	0
Pyogenic	0	100
Tuberculous	66.67	33.33
Viral	50	50
Gout	50	50

Discussion

It is uncertain how common rheumatologic conditions are in underdeveloped nations. In order to launch a global initiative known as the community-oriented program for control of rheumatic illnesses, the World Health Organization (WHO) and International League of Associations for Rheumatology (ILAR) met jointly in Geneva (COPCORD) This program's goal was to provide information about the prevalence of musculoskeletal (MSK) problems in developing nations.[14] A 2006 study found that MSK diseases made up roughly 3.4% of the burden in emerging nations.[15] In our study, participants ranged in age from 21 to 68 years, with a mean age of presentation of 46.36 12.25 years (males = 50 11.68 years and females = 44.19 12.03 years). Females accounted for 64.3% of the study participants, with a female: male ratio of 1.8:1. The modest gender difference, with women experiencing a higher frequency of rheumatic disorders than males, was consistent with current literature, therefore the slight predominance of female patients was not surprising .[16] However, it was 3.79:1 in the Egyptian study, 3.6:1 in the Malaysian study, and 2.8:1 in the Italian study.[16] There is still a lot of attention in whether or not there is a hormone influence effect given that women are more likely than males to develop autoimmune connective tissue disorders and rheumatic diseases. 50-53 When compared to men, women have larger levels of immunoglobulin and produce more antibodies in response to antigen stimulation.[17] Oestrogen and prolactin are pro-inflammatory hormones , and women are more likely to be exposed to them than men, which may help to explain why there are more women than men overall.[17] Although the exact cause of this gender disparity is unknown, studies have suggested that lower testosterone levels, higher prolactin levels during breastfeeding, and more severe symptoms could all be contributing factors.[18] Furthermore, the incidence was rising with age in Greece, per earlier data. This final observation was consistent with our findings because we had also noted a larger ratio of age-related relevance. Our research revealed that the majority of patients were over 50. This study, which is in line with previously published data, demonstrates that rheumatic disorders are more prevalent in this age range.[19] The majority of rheumatic illness patients are elderly, and as the population ages, it is anticipated that there will be a rise in the burden of these diseases in the near future.[20] It was observed that most of the samples were married and had kids. Similar conclusions were reached by other researchers, including Zartaloudi *et al.,* and Viswanath *et al.,*.[21, 22] The age distribution may help to partially explain this observation. The majority of the patients in our sample are between the ages of 30 and 50, representing adults who are legally allowed to get married. The aforementioned information might point to a cohort with a decreased burden of rheumatic disease. There is no way to deduce more information about how each component contributed to this discovery because the contribution of the various components of this category was not further examined. In our survey, a sizable percentage of participants (47.13%) had a college degree. In earlier research, such as those by Docampo *et al.*,samples of patients with high educational levels were also reported (their sample included a higher percentage of individuals who have attended a university).[23] Others, like Malemba *et al.,* who researched a group where there was a majority of people who had completed primary studies, have discovered heightened percentages of the population with low levels of education.[24] It is clear that this discrepancy results from the constraints of each study's methodology and that, in the majority of cases, the individuals were not chosen at random but rather from a convenience sample, as was the case in our study. The most frequent illness groups in the current study are soft tissue rheumatism (42.45%), bone disorder (2.6%), and connective tissue diseases (0.78%), in that order. These results contrasted with those of a community-based rheumatologic outpatient study conducted by Vanhoof *et al.,* in Belgium, which showed that 42% of all patients had inflammatory

joint and spine diseases, 37% had soft tissue rheumatism, 36% had degenerative joint and spine diseases, and 17% had metabolic bone diseases.[9] Non-specific back pain was the most prevalent condition in the soft tissue rheumatism group, followed in decreasing order by adhesive capsulitis, plantar fasciitis, tendinitis/tenosynovitis, tennis elbow, enthesitis CRPS, and fibromyalgia. The most prevalent form of rheumatological illness, primarily affecting women, was fibromyalgia (1.23%). Fibromyalgia was shown to be 0.505% prevalent in a Canadian population, according to research by White *et al*., in the Western Hemisphere. According to a population-based survey, the prevalence of musculoskel *et al*., discomfort was overall 26.3%. Knee osteoarthritis generalized low back pain, lumbar spondylosis, fibromyalgia, and soft tissue rheumatism were the most prevalent rheumatic conditions. 64 stage COPCORD In the Trung Liet Commune, Dong Da district, Hanoi City, Vietnam, 16 groups participated in a study that revealed a 14.9% prevalence of musculoskeletal discomfort. Knee discomfort, low back pain, and soft tissue problem were the three most prevalent musculoskeletal complaints. Approximately 1% of people globally have RA. Depending on the demographic, the prevalence of RA varies greatly [38]. Some studies found evidence of a decline in the prevalence of RA during the past few decades in Europe and America, particularly in females, with a shift in the peak age at start. On the other hand, incidence increased in emerging nations, peaking in women who were capable of bearing children.[26]

Conclusion

In summary, it was observed that male patients with rheumatic disorders were diagnosed in their sixth decade of life while female patients made their appearance earlier, in their fifth decade, a ratio of 1:1.80 men to women. Nearly half of the patients are members of low-income groups. Arthritis inflammatory disease was the diagnosis for 43% of the patients. Soft tissue rheumatism had a proportion that was very similar to the one before it. Other diseases included multisystem disorders, inflammatory disorders, and bone disorders. The most common non-inflammatory articular disorders were lumbar spondylosis and peripheral osteoarthrosis, while the most common inflammatory articular disorders were rheumatoid arthritis and ankylosing spondylitis. In appropriate circumstances, middle-aged men should be evaluated for non-inflammatory causes. When treating female patients, inflammatory arthritis should be considered after ruling out rheumatic illness. Soft tissue rheumatism affects both male and female patients frequently, thus appropriate counseling should be given. When suitable, relatively uncommon diseases such cervical rib syndrome and SLE could be taken into account.

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