



Original Article

## Survey Rheumatic Diseases in ILAM Province, Iran (2018-2019)

Nasrin Bazgir <sup>1</sup>, Mahtab Bonyadi <sup>2</sup>, Elham Shafiei <sup>2,\*</sup>

<sup>1</sup>Department of Rheumatology, Medical School, Ilam University of Medical Sciences, Ilam, Iran

<sup>2</sup>Non-Communicable Diseases Research Center, Ilam University of Medical Sciences, Ilam, Iran

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### ABSTRACT

Rheumatic diseases are among the most health problems that exert economic and social burden on the general population. Patients' information based on the inclusion criteria were collected from hospital records in separate questionnaires, that were assessed in terms of age at the time of referral, sex, ethnicity, initial clinical manifestations, involved joints, presence of comorbid disease and extra-articular involvement. The study population was 3049 patients. The mean age of patients was  $52.24 \pm 12.99$  years. 81 % of the patients were female. The prevalence of osteoporosis (OP) was 22.00%, Rheumatoid arthritis (RA) was 21.51%, and Osteoarthritis (OA) was 16.59%. Joint pain (OR 4.21, 95% CI 3.02–4.81,  $p < 0.001$ ), BMI>25 (OR 3.83, 95% CI 2.01–6.79,  $p < 0.001$ ), and Lack of physical activity (OR 2.34, 95% CI 1.14–3.75,  $p = 0.018$ ) were risk factors of osteoporosis. It is recommended to control the known risk factors associated with these diseases, such as lifestyle modifications, and regular and effective exercise, as well as to review the associated risk factors, especially in women.

### GRAPHICAL ABSTRACT



\* Corresponding author: Elham Shafiei

✉ E-mail: Email: [shafiei-e@medilam.ac.ir](mailto:shafiei-e@medilam.ac.ir)

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## Introduction

Rheumatic diseases are the most common diseases and can affect people of any age [1-3]. Of course, OP and OA have a high prevalence in the elderly people (50 years and above) [4]. Autoimmune diseases are more common in women, while gouty arthritis accounts for 87.5% of cases in men [5]. In addition, the prevalence of rheumatic diseases may be largely as a result of environmental factors. The prevalence of SSc (systemic sclerosis) and SLE (systemic lupus erythematosus) differ in different geographical areas [6].

These diseases include two groups of diseases Inflammatory and non-inflammatory that can cause joint involvement and create a joint outside. Inflammatory disorders are usually accompanied by one or more of the following symptoms:

In these diseases, the most important local and general symptoms include redness, heat, pain and swelling, especially in the joints and fatigue, fever, rash and weight loss in the patient. Non-inflammatory rheumatic diseases are the most common rheumatic diseases that are extremely dependent on age and usually have a better prognosis. 94% of the diagnoses in the category of metabolic bone diseases is Osteoporosis, followed by osteomalacia is 5%.

In total, there are 150 classified diseases of rheumatic disease with clinical picture, treatment and prognosis. Treatment is essential to identify any disease and its changes [7,8]. The prevalence of rheumatic diseases changes over time. Although there are many differences and variations in prevalence and risk factors, although rheumatic disorders are considered a significant threat to public health around the world, the reason for the increasing expansion is of particular importance in developing countries [9-11]. Rheumatic diseases, in addition to disrupting a person's health, can be incurred by incurring costs on the sick person, family and health system in society, in a vicious cycle, increase the amount and severity of their complications. Prevalence and severity of rheumatic disorders, depending on ethnicity and

social and economic conditions different regions, are very different [12].

Considering the various complications and effects of rheumatic disorders on the health system of developing countries, the International Union of Rheumatology Association together with the community-oriented World Health Organization (WHO) has proposed a program to control rheumatic diseases, with the aim of identifying, preventing and controlling them. Reliable epidemiological studies have been considered necessary and important in the study of the prevalence of rheumatic disorders in different countries, especially developing countries [8,13]. However, differences in prevalence or diseases in different geographical areas have always been of interest to researchers in the field of health and medicine due to genetic, geographical and cultural issues. Owing to the fact that in the city of Ilam, studies on the frequency and pattern of rheumatic disorders have not been performed, this study as or review Clinical-oriented baseline was carried out.

## Material and methods

Ilam province, with a population of over 580,000 in the west of the country is located in a fence of mountains and forested heights and has a temperate mountainous and spring climate. In this cross-sectional (descriptive-analytical) study, information of 3049 patients recruited at the Shahid Mostafa Khomeini hospital in Ilam, Iran was collected during the years 2018 to 2019. Information of the medical records of patients diagnosed was saved in a data registry. Inclusion criteria included age  $\geq 14$  years, morning joint stiffness, joint swelling, joint pain, weakness and fatigue. This study used two questionnaires: The first questionnaire was applied to provide clinical information and the second one targeted information on demographic and life-style variables. All patients below age 14 years, and the ones with traumatic joint disease were excluded. The diagnosis of rheumatic diseases was made according to the classification criteria of the American College of Rheumatology (ACR). Ethical approval was obtained for this research work (IR.MEDILAM.REC.1399.249). *Statistical analysis*

Data analysis was used SPSS software 20. Mean and standard deviation (mean ± SD) were used for continuous data, and percentages for categorical variables.

**Result and Discussion**

Overall, 3049 patients with inflammatory rheumatic disease were enrolled. The information of diagnoses patients is presented

separately in Table 1. OP 671(22.00%), Rheumatoid arthritis 656(21.51%) and Osteoarthritis 506(16.59%) were the most common diseases (Table2). The age of patients ranged from 20 to 84 years, with a mean of 52.24 ± 12.99 years.

**Table 1:** Distribution of patients according to demographic information

Variable		N (%)
Gender	Female	1950(64)
	Man	1099(36)
Age	<50	1898(62)
	>50	1151(38)
Marital status	Single	989(32)
	Married	2060(68)
Education Level	Under diploma	1488(58.9)
	diploma	982(25.7)
	Post diploma	579(15.4)
Occupation	Housekeeper	1950(62.9)
	Unemployed	509(16.8)
	Worker	590(20.3)
location	Rural	2158(73)
	urban	891(27)

Overall, women to men ratio was 4.51:1. 80 percent of all patients were female. Age of onset for RA was in the twenties whereas the most common age of onset for OA was in the thirties, and for OP it was forties.

**Table 2:** Information on females, their diagnoses and ages

Diagnosis	Frequency no. (%)	Female (%)	Age			prevalence	
			Minimum	Maximum	Mean		
RA	656(21.51%)	80.1	24	84	54	0.11	
Degenerative joint and spine diseases	Neck. OA	35(1.14%)	70.5	35	82	58.5	0.006
	SPINE.OA	95(3.11%)	60.9	40	70	46.5	0.016
	KNEE.OA	506(16.59%)	70.5	38	82	58.5	0.09
Metabolic bone disease	OP	671(22.00%)	70.8	43	80	32.5	0.11
	Osteomalacia	38(1.24%)	60	41	70	55.5	0.006
Connective tissue disease	SLE	256(8.39%)	80.3	20	55	42.5	0.04
	SS	55(1.80%)	80.6	26	77	51.5	0.009
	SSc	92(3.01%)	70.1	29	55	49.5	0.015
	myopathy/ dermatomyositis	38(1.24%)	60	30	65	47.5	0.006
	Mctd	6(1.96%)	70	29	51	45	0.001

Continue of Table 2:

SPA	A. S	124(4.06%)	20.2	25	60	42.5	0.02
	ReA	6(1.96%)	20	30	61	50.5	0.001
	PsA	81(2.65%)	30.6	20	64	52	0.013
	Enterpathic	3(0.09)	100	34	65	54.5	
	USPA	16(0.52))	60	29	60	49.5	0.002
Regional appendicular syndrome*		58(1.90%)	50.2	33	69	51	0.01
Vasculitides		23(0.75%)	50.2	31	70	50.5	0.003
Behjet disease		74(2.42%)	60.8	25	69	47	0.012
Fibromyalgia		143(4.69%)	70	30	60	54	0.024
Gout		73(2.39%)	30.6	21	66	43.5	0.012

RA (Rheumatoid Arthritis); SLE (Systemic Lupus Erythematosus); SPA (spondyloarthropathies); AS (Ankylosing Spondylitis); ReA (Reactive Arthritis); PsA (Psoriatic Arthritis); USPA (undifferentiated spondyloarthropathies); DM (dermatomyositis); PM (polymyositis; IBM): Inclusion Body Myositis; SS (Sjogren's Syndrome); SSc (Systemic Sclerosis); PMR (polymyalgia rheumatica)

**Table 3:** Mean  $\pm$ SD and frequency of risk factors of Osteoporosis

variable	Osteoporosis		P value
	(yes=671)	(no=671)	
Age	55.37 $\pm$ 12.59	52.46 $\pm$ 14.09	0.065
Weight	74.18 $\pm$ 14.76	71.18 $\pm$ 14.76	0.032
BMI>25(n%)	483(65)	371(55)	0.049
Lack of physical activity (n%)	482(71)	411(61)	0.041
Joint pain (n%)	541(80)	401(59)	0.038
Less than a diploma and diploma (n%)	501(74)	465(69)	0.045

**Table 4:** Regression analysis of osteoporosis

factor	OR	95%CI	P value
Joint pain	4.21	3.02-4.81	<0.001
BMI>25	3.83	2.01-6.79	<0.001
Lack of physical activity	2.34	1.14-3.75	0.018

After regression analysis between risk factors, a significant difference was found between the 2 groups with regards to Joint pain (OR 4.21, 95% CI 3.02–4.81,  $p < 0.001$ ), BMI>25 (OR 3.83, 95% CI 2.01–6.79,  $p < 0.001$ ), and Lack of physical activity (OR 2.34, 95% CI 1.14–3.75,  $p = 0.018$ ) (Table 4)

The frequency and severity of rheumatic and musculoskeletal diseases are highly dependent on the social, cultural and economic conditions of different population.

This difference can depend on the genetic characteristics of individuals and according to the epidemiological characteristics of each region are different. Epidemiological studies in autochthonal populations have to be compelled to overcome

limitations, along with community distrust, restricted access to primary health care, and barriers to participation because of beliefs and the particular cultures of every region that are expected to overcome these cases, paving the way for achieving statistics near to reality, for macro-health planning.

The main purpose of this study was to explore the frequency and variety of rheumatic diseases in patients who referred to the rheumatology clinic according to data registry. As far as the prevalence of rheumatic diseases such as lupus, osteoporosis and fibromyalgia is considered, about 90% of patients are female. In our study, the number of female patients was significantly higher than that of males, and the female-to-male

ratio in diseases such as rheumatoid arthritis, lupus, ankylosing spondylitis, osteomalacia, and osteoporosis was almost as large as the proportions obtained from epidemiological studies. In this study, most patients were in the age range of 35 to 55 years. Perhaps these results can be attributed to the young population of our country compared with European countries and the low average life expectancy compared with industrialized countries. Our results showed that prevalence of RA was 0.11. Jamshidi *et al.* [14] showed the prevalence of RA was 0.33%, in the range 0.7% in rural of Australia to 0.12% in Thailand. Also, the results of studies in Italy and Spain showed that prevalence of RA was 0.3 – 0.5%, and 0.68% elsewhere [15-17].

Rheumatoid arthritis, such as rheumatoid arthritis, is a systemic and chronic disease. According to studies, this disease has affected one percent of the world's population. Of course, the prevalence of this disease in Iran is lower than the world level; however, its prevalence in the country has been announced by 25%, meaning 36 out of every 10,000 people get the disease. It can affect people of all ages, from 6-year-olds to 80-year-olds, but it is more common in adults between the ages of 20 and 40. The prevalence rate of AS among whites, ranges from 68 per 100,000 in the Netherlands, and 197 per 100,000 in the United States [18]. This is while its prevalence in our study was 0.02. The results of a retrospective study in Northern Norway showed that the prevalence of AS was 0.21% [19]. Likewise, a study, using a questionnaire, reported prevalence of AS by 0.37%, and SpA by 1.1% [20]. A study in north-west Greece showed AS prevalence to be 0.03%, in 80.5% of patients [20]. Another a study in Greece reported that the prevalence of AS was 0.24% and SpA was 0.49%. The prevalence of AS in Izmir was 0.49% [21].

The prevalence of PsA in our study was 0.013. The prevalence of PsA in a study in USA was 0.1% and in another study directed in a random U.S. population sample was 0.25% [22]. In another study, the prevalence of psoriasis was 2.2% [22]. Further, the results a study covering 442,000 persons found the prevalence of AS by 0.19% [23]. PsA prevalence in our study was near the

one reported in Greece (0.17%). SLE prevalence in our study was 0.04%, slightly lower than that reported in northwest Greece [24]. The prevalence of SLE in Quebec in Canada was 0.05%, in a study using General Practice Research Database in UK [25]. The results of a study using a database in northern Spain reported a prevalence of SLE by 0.034% and in northern Italy, a study using a hospital medical record reported a prevalence of SLE of 0.058% [26]. Also, our results showed that prevalence of SSC was 0.015.

The prevalence of gout, is higher in men than women, increases with age and is on the increase. In the U.S., the prevalence of gout increased from 2.1% to 4.1% in adult age >75 years [27]. In the U.S., the highest prevalence (8%; males, 11.6%; females, 5.2%) was found in adults of 70-79 years [28, 29]. Gout prevalence in our study is 0.012. The results of Murphy *et al.* showed knee OA was 44.7% [30]. The prevalence of hand OA in one study was 13.4% in men and 26.2% in women. [31, 32]. The prevalence of knee OA in the U.S. was 12.1% in adults over 60 years of age and 16.7% in adults over 45 years of age in Johnston, North Carolina [33].

In France, the prevalence of osteoarthritis was 7.6% in the knee and 5% in the hip. [33]. In Spain, the frequency of symptomatic hand OA was 6.2% and knee OA by 10.2% [34]. There is a low frequency of hand OA in our study. Patients with hand OA may have mild symptoms and do not seek medical advice. OA patients may have mild symptoms and do not seek medical advice. Thus, these patients were not informed about their condition compared with non-manual workers, the relatively low prevalence of OA in manual workers may be attributed to women as housewives. These women, including workers, can not only do housework, but also work manually in the fields, which is common practice in the country.

In addition, the results of a study in Greece showed that the prevalence of symptomatic arthritis of the hands was 2.0%, that of symptomatic arthritis of the knee was 6.0%, and arthritis of the hips was 0.9% [35]. In our study prevalence of OA of Neck, Spine, knee is 0.006,

0.016 and 0.09, respectively. Low back pain (lumbago) is a mechanical feature as a frequent manifestation in the young population, especially in men under 50 years of age.

The results of this study showed that joint pain, BMI>25, inactivity can be considered as risk factors for osteoporosis. These results are consistent with the study of Kojima [36] and Nilsson [37]. The most common joint disorders in our study were RA and OP, affecting nearly a quarter of adult population. As a limitation of our study, only patients who referred to a rheumatologist were covered. It does not provide information to patients in the population. Therefore, there is no information on how to diagnose and treat diseases in the general population.

### Conclusions

Please add conclusion

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### Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

### Conflict of Interest

The authors declare no conflicts of interest.

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