Prevalence of Rheumatic Diseases in Brazil: A Study Using the COPCORD Approach

ÉRIKA RODRIGUES SENNA, ANA LETÍCIA P. DE BARROS, EDVÂNIA O. SILVA, ISABELLA F. COSTA, LEONARDO VICTOR B. PEREIRA, ROZANA MESQUITA CICONELLI, and MARCOS BOSI FERRAZ

ABSTRACT. ***Objective.*** To estimate the prevalence of rheumatic diseases in residents of Montes Claros, Brazil, of both sexes, aged above 16 years, using the COPCORD questionnaire.

Methods. This was a cross-sectional study of 3038 people; the sample was probabilistic, by conglomerates, multiple stages, within homogeneous strata, the sampling unit being the domicile. The COPCORD questionnaire was used for all subjects, and a rheumatologist evaluated those patients who presented pain and/or functional disability. Laboratory tests and radiographs of small and large joints were done in some patients to confirm the diagnosis. Subjects were identified by socioeconomic level in quintiles A, B, C, D, and E, A being the highest.

Results. Two hundred nineteen patients were identified with rheumatic diseases, mean age 37 (SD 27) years, with female predominance. Seventy-seven (35.2%) were unemployed and socioeconomic level D was the most prevalent. Of all patients with rheumatic disease, osteoarthritis (OA) was observed in 126 (57.5%) patients, fibromyalgia (FM) in 76 (34.7%), rheumatoid arthritis (RA) in 14 (6.4%), and lupus in 3 (1.4%). Women were predominant in all diseases except OA. The mean (SD) age was 56 (12.7) years for OA, 43.2 (9.1) for FM, 53.4 (13.9) for RA, and 40 (14) for lupus.

Conclusion. The prevalence of rheumatic diseases evaluated by the COPCORD questionnaire was 4.14% for OA, 2.5% for FM, 0.46% for RA, and 0.098% for lupus. (J Rheumatol 2004;31:594–7)

Key Indexing Terms:
RHEUMATIC DISEASES PREVALENCE COPCORD BRAZIL

Rheumatic diseases are among the oldest and most incapacitating illnesses in clinical practice[1,2]. The high prevalence of rheumatic diseases in the adult population represents a significant cause of morbidity in developed countries. An estimated 10% of the population is afflicted with some form of rheumatic illness, and this frequency is estimated to grow to 22% in individuals over 16 years of age. National health surveys conducted from 1989 to 1991 in the United States found that 15% of the population had some form of arthritis and that this index was rising with age. Epidemiological data on the prevalence of rheumatic diseases could help in targeting efforts for the prevention and control of these diseases. Few epidemiological studies estimating the prevalence of rheumatic diseases have been conducted in Latin America[3], specifically in Brazil[4-6]. In our region, we currently do not have a profile of the prevalence of various musculoskeletal diseases.

The COPCORD approach is based upon 3 phases — screening, pre-evaluation, and evaluation by a rheumatologist — and has been applied in several epidemiological studies[7]. The objective of this study was to estimate the prevalence of rheumatic diseases in Brazil using the COPCORD approach.

MATERIALS AND METHODS

Our study was conducted in the city of Montes Claros, in the north region of the state of Minas Gerais. Table 1 summarizes the sociodemographic characteristics of the study sample. The size of the sample was calculated based on defined and acceptable standard error around the estimated prevalence, i.e., for the presence of rheumatologic symptoms[7]. The sample was probabilistic, through conglomerates, with the domicile as the unit sample.

The city was divided into a total of 186 census sectors according to the Brazilian Institute of Geography and Statistics (IBGE). This study focused on the 167 sectors representing non-special urban and sub-normal urban sectors. Of the 3168 individuals from these 167 sectors that were approached in their homes by a team of 10 health care researchers, a total of 3038 agreed to be interviewed. The researchers interviewed people 7 days a week in the mornings, afternoons, and evenings, using the COPCORD questionnaires, during a period of one year and 10 months.

Using a map that included all the streets to be researched, the researchers began at an initial intersection and moved away in opposite directions. Each researcher approached the tenants of every other house until 30 houses on the particular street were approached or until the end of the street. The adjacent street was then canvassed. If the individual was not at home, the researcher returned again up to 3 times. The mean time to answer the COPCORD questionnaire was 9 minutes.

From the Division of Rheumatology, Department of Medicine, University of Montes Claros — UNIMONTES, São Paulo, Brazil.

E.R. Senna, MD, Associate Professor, Division of Rheumatology, Department of Medicine, University of Montes Claros–UNIMONTES; A.L.P. Barros, MD, Gynecology Resident, Hospital Municipal Odilon Behres, Belo Horizonte; E.O. Silva, MD, General Practice Resident, Hospital de Base, Brasília; I.F. Costa, MD, General Practice Resident, Santa Lygia Institute, Ribeirão Preto; L.V.B. Pereira, MD, General Practice Resident, Hospital Governador Israel Pinheiro, Belo Horizonte; R.M. Ciconelli, MD, Visiting Professor, Division of Rheumatology, Department of Medicine, Federal University of São Paulo–UNIFESP; M.B. Ferraz, MD, Associate Professor, Division of Rheumatology, Department of Medicine, Federal University of São Paulo–UNIFESP.

Address reprint requests to Dr. M.B. Ferraz, Escola Paulista de Medicina, Disciplina de Reumatologia, Rua Botucatu 740, São Paulo SP, Brazil CEP 04023-062.

Submitted February 18, 2003; revision accepted August 11, 2003.

Personal, non-commercial use only. The Journal of Rheumatology Copyright © 2004. All rights reserved.

Downloaded on September 14, 2026 from www.jrheum.org

Table 1. Sociodemographic characteristics of 3038 individuals that were interviewed.

Sex, n (%)	
Male	1109 (36.5)
Female	1929 (63.5)
Age, yrs, n (%)	
16–34	1565 (51.5)
35–54	1038 (34.2)
55–74	387 (12.8)
75–92	48 (1.57)
Mean (SD)	36 (16)
Range	16–92
Color, n (%)	
White	1148 (37.8)
Non-White	1890 (62.2)
Socioeconomic level, n (%)	
A	119 (3.9)
B	540 (17.8)
C	902 (29.7)
D	1169 (38.5)
E	308 (10.1)
Working n (%)	
Yes	2029 (66.8)
No	1009 (33.2)

Socioeconomic class was determined in accord with IBGE data. Indices of consumer potential, level of domestic comfort, and education level were used to divide the population into quintiles, denominated A (the highest socioeconomic class) B, C, D, and E (the lowest class).

The inclusion criteria were subjects age 16 years or over, who had resided at the address for at least 6 months.

Completed questionnaires were forwarded to a rheumatologist for analysis. Subjects were invited by telephone or mail for a clinical visit and physical examination if they presented physical disability and/or pain, according to the following requirements: (1) Pain or tenderness in bones, joints, or muscles in the last 7 days. (2) Absence of any trauma at that location before the appearance of pain or tenderness.

This clinical evaluation was conducted one week after the completion of the interview. A rheumatologist blinded to the results of the survey evaluated each subject selected according to the above criteria and invited for clinical evaluation. After the clinical evaluation, laboratory examinations and radiographs of small or large joints were required by the rheumatologist to confirm the diagnosis. This was considered a single time-point examination and the medical records of these patients were not evaluated.

This study focused on identification of 4 specific rheumatic diseases; diagnosis of osteoarthritis (OA)[8-10], fibromyalgia (FM)[11], rheumatoid arthritis (RA)[12], and systemic lupus erythematosus (SLE)[13] was performed in accord with the internationally accepted American College of Rheumatology (ACR) classification criteria.

RESULTS

A total of 940 (30.9%) of the 3038 people who completed the COPCORD and Medical Outcome Study Short-Form-36 questionnaires experienced musculoskeletal symptoms and were subsequently invited to undergo examination; finally, 810 of these (85.5%) underwent the clinical evaluation. Two hundred nineteen (7.2%) of the 3038 people were diagnosed with one of OA, RA, FM, or SLE.

Table 2 summarizes the prevalence of rheumatic diseases identified in the 810 subjects, as follows: OA 4.14% (95% confidence interval, CI, 3.46–4.91); FM 2.5% (95% CI 1.97–3.12); RA 0.46% (95% CI 0.25–0.77); and SLE 0.098% (95% CI 0.02–0.28).

Table 2. Prevalence of osteoarthritis, fibromyalgia, rheumatoid arthritis, and systemic lupus erythematosus in Montes Claros.

Diagnosis	Estimated Prevalence N (%)	95% CI
OA	126 (4.14)	3.46–4.91
FM	76 (2.50)	1.97–3.12
RA	14 (0.46)	0.25–0.77
SLE	3 (0.098)	0.02–0.28

For the 3038 subjects, prevalence data of those diagnosed with rheumatic diseases according to sex and age are shown in Tables 3 and 4. The group was divided into 4 subgroups according to the range in age: 16–34 years (1565 individuals), 35–54 years (1038 individuals), 55–74 years (387 individuals), and 75–92 years (48 individuals). The highest prevalence of FM was observed in the group aged 35–54 years.

Tables 5 and 6 summarize the demographic characteristics of subjects diagnosed with RA, FM, and OA. As can be seen, the majority of patients with these diseases were non-white women. Almost 70% of the patients were classified in the socioeconomic levels C and D. More than 80% of the FM and OA patients considered their pain was moderate or severe, and for RA patients the description of the pain was considered light (28.6%) or moderate (35.7%). According to the evaluation of physical disability, 53 patients (24.2%) considered themselves to be currently limited, 71 (32.4%) limited sometime in the past, and 95 (43.4%) never had been limited. Twenty-nine (13.2%) patients were being following by a rheumatologist, 22 (10%) by a general physician, and 82 (37.4%) had not yet visited a physician.

Two of the 3 patients with SLE (Group 1) were women and 2 were non-white. The mean age was 40 (SD 14) years.

Table 3. Prevalence of osteoarthritis, fibromyalgia, rheumatoid arthritis, and systemic lupus erythematosus by sex; 1929 women, 1109 men.

Diagnosis	Estimated Prevalence N (%)	95% CI
OA		
Male	19 (1.71)	0.95–2.4
Female	107 (5.55)	4.46–6.59
FM		
Male	1 (0.09)	0.0–0.26
Female	75 (3.89)	3.03–4.75
RA		
Male	1 (0.09)	0.0–0.26
Female	13 (0.68)	0.32–1.04
SLE		
Male	1 (0.09)	0.0–0.26
Female	2 (0.11)	0.0–0.24

Personal, non-commercial use only. The Journal of Rheumatology Copyright © 2004. All rights reserved.

Downloaded on September 14, 2026 from www.jrheum.org

Table 4. Prevalence of osteoarthritis, fibromyalgia, and rheumatoid arthritis by age range 16–34 years (n = 1565), 35–54 years (1038), 55–74 years (387), and 75–92 years (48).

Diagnosis	Estimated Prevalence N (%)	95% CI
OA		
16–34	0 (—)	—
35–54	54 (5.3)	4.0–6.6
55–74	61 (15.8)	12.2–19.4
75–92	11 (23)	11.1–34.9
FM		
16–34	12 (0.77)	0.55–1.19
35–54	57 (5.5)	4.2–6.8
55–74	7 (1.9)	0.6–3.2
75–92	0 (—)	—
RA		
16–34	2 (0.13)	0.0–0.3
35–54	5 (0.49)	0.07–0.91
55–74	6 (1.56)	0.33–2.79
75–92	1 (2.09)	0.0–6.09

Table 5. Demographic data on the 810 patients. Data are n (%), unless otherwise indicated.

	RA	FM	OA
Male	1 (7.1)	1 (1.3)	19 (15.1)
Female	13 (93)	75 (98.7)	107 (84.9)
Age, yrs			
16–34	2 (14.3)	12 (15.8)	0 (0.0)
35–54	5 (35.7)	57 (75.0)	54 (42.9)
55–74	6 (42.8)	7 (9.2)	61 (48.4)
75–92	1 (7.2)	0 (0.0)	11 (8.7)
Mean (SD)	53.43 (13, 10)	43.29 (9, 10)	56 (12.7)
Range	30–82	16–68	41–91
Color, n (%)			
White	5 (35.7)	26 (34.2)	47 (37.3)
Non-white	9 (64.3)	50 (65.8)	59 (62.7)
Rheumatoid factor+	9 (63)	ND	ND
Marital status			
Single	1 (7.1)	6 (7.9)	14 (11.1)
Married	7 (50)	55 (72.4)	81 (64.3)
Widow (er)	5 (35.7)	7 (9.2)	25 (19.8)
Divorced	1 (7.1)	8 (10.5)	6 (4.8)
Site of arthritis			
Spline	—	—	67 (53.1)
Knees	—	—	47 (37.3)
Hands	—	—	9 (7.1)
Hip	—	—	6 (4.7)
More than one location	—	—	27 (21.4)
Socioeconomic level*			
A	0	1 (1.3)	3 (2.4)
B	2 (14.3)	16 (21.1)	19 (15.1)
C	6 (43)	25 (32.9)	38 (30.2)
D	5 (35.7)	26 (34.2)	55 (43.7)
E	1 (7.1)	8 (10.5)	11 (8.7)

* A = highest level; B, C, D = intermediate; E = lowest level.

Table 6. Characteristics of pain, physical disability, and type of treatment: subjects with RA, FM, and OA. Data are n (%) unless otherwise indicated.

	RA	FM	OA
Pain			
Yes	14 (100)	76 (100)	126 (100)
No	0	0	0
Description of pain			
Absent	0	0	0
Light	4 (28.6)	5 (6.6)	17 (13.5)
Moderate	5 (35.7)	41 (53.9)	73 (57.9)
Severe	3 (21.4)	28 (36.8)	33 (26.2)
Very severe	2 (14.3)	2 (2.6)	3 (2.4)
Numeric Rating Scale, 1–10			
Average (SD)	6.14 (2.71)	6.51 (2.19)	6.02 (2.26)
Physical disability			
Limited now	5 (35.7)	15 (19.7)	32 (25.4)
Limited before	5 (35.7)	30 (39.5)	34 (27.0)
Never limited	4 (28.6)	31 (40.8)	60 (47.6)
Treatment			
None	3 (21.4)	33 (43.4)	45 (35.7)
Clinical	1 (7.1)	7 (9.2)	14 (11.1)
Rheumatologist	5 (35.7)	9 (11.8)	13 (10.3)
Physiotherapist	0	0	2 (1.6)
Self-medication	3 (21.4)	5 (6.6)	3 (2.4)
Other	2 (14.3)	22 (28.9)	49 (38.9)

DISCUSSION

The predominance of women in the study sample mirrors the demographic characteristics in the general population of Montes Claros, which is predominately female (51.6%).

There were 130 patients whose questionnaire answers indicated symptoms of musculoskeletal disease but who refused the physical examination. The most frequent reasons cited for this refusal were the expense of transportation to get to the clinic and self-reported amelioration of the symptoms. Assuming that the number of these 130 patients that would have been diagnosed with rheumatic disease had they been examined is proportionally similar to those 810 patients that were examined, we estimate that 35 cases would be found, resulting in a total of 254 subjects with rheumatic disease in this study (8.3%). In the same way, if we consider that these patients could have 2 or 3 times greater chances of having one of the investigated conditions, we would find 289 (9.5%) or 324 (10.6%) carriers of these diseases, respectively. On the other hand, if these same sick people had no rheumatic disease, there would be no changes in the estimated prevalence. We believe that it was unlikely, given the smaller number, that it would have made a significant difference to the estimate of prevalence.

OA was the most prevalent disease, occurring in 4% of the 3038 subjects. It is notable that our screening strategy used only symptomatic patients. It is probable that some patients with OA who did not report a symptom at the time of the screening were not selected, thus the prevalence could be underestimated. For example, individuals could have OA of the hands, which is in some cases not symptomatic, and

Personal, non-commercial use only. The Journal of Rheumatology Copyright © 2004. All rights reserved.

Downloaded on September 14, 2026 from www.jrheum.org

Personal, non-commercial use only. The Journal of Rheumatology. Copyright © 2004. All rights reserved.

thus would not have been identified by the COPCORD approach. The afflicted population was relatively older and predominately female (84.9%). This age and sex bias may be postulated by the absence of the possible estrogen protection effect. Other characteristics of the subjects with disease were a non-white ethnicity and a low socioeconomic status (level D). While patients most commonly felt moderate to severe pain, most patients reported an absence of functional limitations.

In the FM group of 76 patients, we observed that disease occurred in 2.5% of the population, mainly in women. There were 15.8% of cases in young women (under 35 years), 40.8% in middle-aged people (35–44 years), and 1.3% in elderly patients (65–74 years). Patients that were married were predominant (72.4%) at the time of the study. In this FM group, we found a predominance of non-white subjects and a low socioeconomic level.

Several studies have found a prevalence of rheumatic diseases similar to our study. Chou, *et al*[14] found a prevalence of OA of 5.1%. Prevalence of FM has been determined in 4 separate studies: 2.7% by White, *et al*[15], 2% by Cathebras, *et al*[16], 2% by Raspe and Baumgartner[17], and 1.3% by Lindell, *et al*[18]. Studies on RA describe the following prevalences: 0.43% by Kvien, *et al*[19], 0.5% by Power, *et al*[20], 0.21–0.48% by Drosos, *et al*[21], 0.69% by Stojanovic, *et al*[22], 1.07% by Gabriel, *et al*[23], and 1.4% by Steven[24]. Hochberg[25], Hopkinson[26], Kardestuncer and Frumkin[27], and Siegel and Lee[28] all found a prevalence of SLE ranging from 0.14% to 0.5%.

Our study provides an estimate of the prevalence of rheumatic diseases in Brazil, thereby contributing to the body of epidemiological data of the country. These data will assist decision-making efforts in the health system. Sound knowledge about the needs of the population will help in the appropriate selection and application of interventions and use of resources. Studies are needed to elucidate epidemiological data of other localities in Brazil to further our understanding of the most effective ways to improve health in our Brazilian population.

REFERENCES

1. Sangha O. Epidemiology of rheumatoid arthritis. Rheumatology Oxford 2000;39 Suppl 2:3-12.
2. Symmons, D. Epidemiologic concepts and rheumatology. In: Klippel JH, Dieppe PA, editors. Rheumatology. 2nd ed. Philadelphia: Mosby; 1998:4.1-4.8.
3. Ferraz MB. Tropical rheumatology. Epidemiology and community studies: Latin America. Baillieres Clin Rheumatol 1995;9:1-9.
4. Sato EI, Atra E, Schichikawa K, Inoue K. Estudo da prevalência da Artrite Reumatóide em população de origem japonesa em Mogi das Cruzes. Rev Bras Reumatol 1990;30:133-6.
5. Marques Neto JF, Gonçalves HT, Langen LFOB, et al. Estudo multicêntrico da prevalência da artrite reumatóide do adulto em amostras da população brasileira. Rev Bras Reum 1993;33:169-73.
6. Costallat LTL. Contribuição ao estudo do LES: Análise clínica e laboratorial de 272 casos (1973-1992) [dissertation]. Campinas: Universidade Estadual de Campinas; 1992, 132 p.
7. Bennett K, Cardiel MH, Ferraz MB, Riedemann P, Goldsmith CH, Tugwell P. Community screening for rheumatic disorder: cross-cultural adaptaion and screening characteristics of the COPCORD core questionnaire in Brazil, Chile and Mexico. J Rheumatol 1997;24:160-8.
8. Altman R, Asch E, Bloch D, et al. Development of criteria for the classification and reporting of osteoarthritis. Classification of osteoarthritis of the knee. Arthritis Rheum 1986;29:1039-49.
9. Altman R, Alarcon G, Appelrouth D, et al. The American College of Rheumatology criteria for the classification and reporting of osteoarthritis of the hand. Arthritis Rheum 1990;33:1601-10.
10. Altman R, Alarcon G, Appelrouth D, et al. The American College of Rheumatology criteria for the classification and reporting of osteoarthritis of the hip. Arthritis Rheum 1991;34:505-14.
11. Wolfe F, Smythe HA, Yunus MB, et al. The American College of Rheumatology 1990 criteria for classification of fibromyalgia — Report of the Multicenter Criteria Committee. Arthritis Rheum 1990;33:160-72.
12. Arnett FC, Edworthy SM, Bloch DA, et al. The American Rheumatism Association 1987 revised criteria for the classification of rheumatoid arthritis. Arthritis Rheum 1988;31:315-24.
13. Tan E, Cohen MA, Fries JF, et al. The 1982 revised criteria for the classification of SLE. Arthritis Rheum 1992;25:1271-7.
14. Chou CT, Pei L, Chang DM, Lee CF, Schumacher HR, Liang MH. Prevalence of rheumatic diseases in Taiwan: a population study of urban, suburban, rural differences. J Rheumatol 1994;21:302-6.
15. White KP, Speechley M, Harth M, Ostbye T. The prevalence of fibromyalgia syndrome in London, Ontario. J Rheumatol 1999;26:1570-6.
16. Cathebras P, Lauwers A, Rousset H. La fibromyalgie. Ann Med Intern 1998;149:406-14.
17. Raspe H, Baumgartner C. The epidemiology of the fibromyalgia syndrome in a German town. Scand J Rheumatol 1992;8 Suppl 94:8.
18. Lindell L, Bergman S, Petersson IF, Jacobsson LTH, Herrstrom P. Prevalence of fibromyalgia and chronic widespread pain. Scand J Prim Health Care 2000;18:149-53.
19. Kvien TK, Glennas A, Knudsrod OG, et al. The prevalence and severity of rheumatoid arthritis in Oslo. Result from a county register and a population survey. Scand J Rheumatol 1997;26:412-8.
20. Power D, Codd M, Ivers L, Sant S, Barry M. Prevalence of rheumatoid arthritis in Dublin, Ireland: a population based survey. Ir J Med Sci 1999;168:197-200.
21. Drosos AA, Alamanos I, Voulgari PV, et al. Epidemiology of adult rheumatoid arthritis in northwest Greece, 1987-1995. J Rheumatol 1997;24:2129-33.
22. Stojanovic R, Vlajinac H, Palic-Obradovic D, et al. Prevalence of rheumatoid arthritis in Belgrade, Yugoslavia. Br J Rheumatol 1998;37:729-32.
23. Gabriel SE, Crowson CS, O'Fallon WM. The epidemiology of rheumatoid arthritis in Rochester, Minnesota, 1955-1985. Arthritis Rheum 1999;42:415-20.
24. Steven MM. Prevalence of chronic arthritis in four geographic areas of the Scottish Highlands. Ann Rheum Dis 1992;51:186-94.
25. Hochberg MC. Prevalence of systemic lupus erythematosus in England and Wales, 1981-2. Ann Rheum Dis 1987;46:664-6.
26. Hopkinson N. Epidemiology of systemic lupus erythematosus. Ann Rheum Dis 1992;51:1292-4.
27. Kardestuncer T, Frumkin H. Systemic lupus erythematosus in relation to environmental pollution: an investigation in an African-American community in North Georgia. Arch Environ Health 1997;52:85-90.
28. Siegel M, Lee SL. Epidemiologic studies on systemic lupus erythematosus. Comparative data from New York City and Jefferson County, Alabama, 1956-1965. Arthritis Rheum 1973;3:1-54.

Personal, non-commercial use only. The Journal of Rheumatology Copyright © 2004. All rights reserved.

Downloaded on September 14, 2026 from www.jrheum.org