WHO-ILAR COPCORD Study (Stage 1, Urban Study) in Iran

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ABSTRACT. *Objective.* To find the prevalence of musculoskeletal complaints and rheumatic disorders in Iran.
Methods. Tehran, with one-ninth of the population of Iran and of mixed ethnic origins, was selected as the field. Subjects were randomly selected from the 22 districts. Interviews were conducted once a week, on the weekend. The 3 phases of stage 1 were done on the same day, in parallel, like the fast-track Community Oriented Program for Control of Rheumatic Diseases (COPCORD).
Results. Four thousand ninety-six houses were visited and 10,291 persons were interviewed. Musculoskeletal complaints during the past 7 days were detected in 41.9% of the interviewed subjects. The distribution was: shoulder 14.5%, wrist 10%, hands and fingers 9.4%, hip 7.1%, knee 25.5%, ankle 9.8%, toes 6.1%, cervical spine 13.4%, and dorsal and lumbar spine 21.7%. Degenerative joint diseases were detected in 16.6% of subjects: cervical spondylosis 1.8%, knee osteoarthritis (OA) 15.3%, hand OA 2.9%, and hip OA 0.32%. Low back pain was detected in 15.4% and soft tissue rheumatism in 4.6%. Inflammatory disorders were rheumatoid arthritis 0.33%, seronegative spondyloarthropathies 0.23%, ankylosing spondylitis 0.12%, systemic lupus erythematosus 0.04%, and Behçet's disease 0.08%. Fibromyalgia was detected in 0.69% and gout in 0.13% of the studied population.
Conclusion. The large urban COPCORD study in Iran showed a high prevalence of rheumatic complaints in the population over the age of 15 years, 41.9%. Knee OA and low back pain were the most frequent complaints. (First Release May 1 2008; J Rheumatol 2008;35:1384–90)

Key Indexing Terms:
PREVALENCE   IRAN   RHEUMATIC DISEASES   MUSCULOSKELETAL COMPLAINTS

The Community Oriented Program for Control of Rheumatic Diseases, the COPCORD, was created by the collaboration of the World Health Organization (WHO) and the International League of Associations for Rheumatology (ILAR) in 1981. The aim of the program is the recognition, prevention, and control of rheumatic disorders in developing countries, where two-thirds of the world's population live. The program was designed to work with small monetary and material resources. It had 3 stages: Stage 1.0: Epidemiology or population surveys of the rheumatic diseases in 1–4 phases. Stage 2.0: Education of primary healthcare professionals in the optimal management of common rheumatic diseases. Stage 3.0: Improved healthcare and quality of life and environmental etiologic research of rheumatic diseases, inclusive of genetic research, in cooperation with an advanced center that might be abroad.

Australia[1,2], Bangladesh[3], Brazil[4], Chile[5], China[6-8], Cuba[9], Indonesia[10], India[11], Iran[12-14], Kuwait[15], Malaysia[16], Mexico[17], Pakistan[18], Philippines[19-21], Thailand[22], and Vietnam[23] are among countries having a COPCORD study. Stage I was designed to evaluate at least 1500 people of over 15 years of age. All participating countries, depending on their resources, performed the program.

A small scale COPCORD study was performed in a rural community in Iran in 1993[12]. It was conducted on 2502 persons in Fasham, a district of Shemiranat, which is the north-

ern suburb of Tehran. Fasham district is formed by several villages in the Elburz Mountains situated in altitudes of 1840 to 2450 meters above sea level. The population is Caucasian, with few families and frequent intermarriage among them. On the other hand, Iran is a country with different racial and ethnic groups, mainly Caucasians, but also a substantial number of East Asians, and a minority of Semites[24,25]. It was therefore important to have a new COPCORD study taking into account the broader ethnic populations of Iran and in a normal setting with no abnormally high rate of intermarriages.

MATERIALS AND METHODS

The city of Tehran, the capital of Iran, was selected as the field for the COPCORD study. The rationale for this selection was as follows.

Ethnic distribution[24]: Iran is situated in the middle of the Silk Road. Iran was long known as the crossroads between East and West. The population of Iran is mixed. The main ethnic group, Caucasians, compose 75.4% of the population. Turks, of East Asian origin, are 22% of the population. The third ethnic group is Semites, who compose only 2.6% of the population. They are subdivided into Arabs, Jews, and Assyrians. Each part of Iran contains mainly one of the 2 major ethnic groups, Caucasians or Turks. Tehran is an exception to the rule, containing one-ninth of Iran's population. The population is of mixed origin and represents all ethnic groups. Tehran is a relatively young city. Most of its population is composed of immigrants who came after the 1979 revolution, coming from all parts of Iran. No other city is as representative of the whole of Iran as Tehran.

Goal of 10,000 subjects: The time period for the project was set for 1 year. In Tehran, the interviewers could conduct interviews only on the weekends. To interview nearly 200 subjects every week, a large team was needed. This team had to consist of interviewers, several rheumatologists for clinical examinations in the field, technicians for blood sampling, and the necessary support personnel. Such a team was available only in Tehran.

All interviews and medical examinations had to be checked by the Rheumatology Research Center's staff professors, and in case of any doubt the patient had to be reexamined by one of them.

Sampling plan. Tehran is divided into 22 municipal districts. Multistage sampling was used to select the people from Tehran's citizens. In the first stage, a total of 50 addresses were randomly selected from the 22 districts by using the Iranian Post Office zip code data bank. The number of clusters assigned to each of the municipal districts was proportional to the district's population size. These addresses were used as the starting point (cluster head) for each of the 50 clusters. Each cluster consisted of adjacent houses selected first from the cluster head and then the following to its right side. The number of households taken from each cluster varied from 90 to 100. The last Iran population census (1996) gave an average of 2.7 persons per household (aged 15 yrs and over) in Tehran.

Questionnaire. The COPCORD Core Questionnaire (CCQ) was used to screen subjects for musculoskeletal complaints. The original CCQ comprised 7 main sections: background information (A), work history (B), pain/tenderness/swelling/stiffness during last week (C1) and in the past (C2), functional disability (D), difficulty in performing specific tasks (E), treatment (F), and evaluation (G). In our study, we added another section for extraarticular symptoms of some rheumatic diseases (H: aphthous ulcers, blurred vision, etc.). The original CCQ was translated from English into Farsi by a rheumatologist not working for the project. The Farsi version was translated back to English by another rheumatologist who was unaware of the original English questionnaire. The comparison of the original and the back-translated questionnaire did not differ significantly. The Farsi version of the CCQ was validated in a pretest in 50 subjects. Sections A, B, C1, D, G, and H of the final questionnaire were administered to all individuals. Respondents who did not report any rheumatic complaint dur-

ing the past week (negative C1) were asked if they had had any rheumatic complaint before the last week of the interview (C2). Respondents with current functional disability (positive D) were administered part E of the CCQ. Finally, treatment questions (part F) were asked of all who had any current or past musculoskeletal or extraarticular complaints.

Training of field data collectors. Interviewers were chosen from Bachelor of Science certified nurses or nurse-midwives. Examinations were done by rheumatology fellows. Blood sampling was done by laboratory technicians. Management of data collection in every field was supervised by the chief of the team, who was selected from general practitioner physicians. Monitoring and quality control of the data collection in the field was done by specially trained physicians. All team personnel took part in a comprehensive training workshop. Five different workshops were held for each of the groups. The training consisted of COPCORD history and its concepts, study purpose, how to interview subjects and administer the questionnaires, and the physical examination checklist. The interviewers had to pass an examination by interviewing a selected number of subjects. The observed agreement in screening the subjects with CCQ and reporting them as a positive patient was 0.96, and the κ coefficient was 0.919 (standard error 0.112).

Pilot study. To assess the feasibility of the project with the designed protocol and test the subjects' compliance, a pilot study was undertaken. Five teams participated in the pilot study. Each team was composed of a team head, 3 interviewers, one rheumatologist, one laboratory technician for blood sampling, 2 cars, and 2 drivers. Five clusters, outside those selected for the main study, were randomly selected. One hundred sixty-eight houses were visited, and 284 interviews were completed[12].

Data collection. The 3 phases of stage I were done on the same day, in parallel, like the fast-track COPCORD. The CCQ had different parts. The first part (rheumatic problems in the past week) was administered to all, by a trained interviewer. A human mannequin figure was used to mark pain sites by the interviewed person. Laboratory tests and radiographs were performed on the rheumatologist's request.

On Mondays, the selected cluster was visited by the project manager and one assistant. They identified the houses that would be visited, and pinned up the COPCORD posters to let people know about it. During the study period, several television and radio programs informed the population about the COPCORD study and its aims. On Wednesdays, the team's head and 3 interviewers went again to the same cluster to announce to people about the study and complete the family folders forms (if they agreed to be interviewed). In this form, the identification information of persons age 15 years and above of each family was recorded. On Fridays, 3 teams simultaneously went to 3 assigned fields. Each team was composed of the team's head, 4 to 6 interviewers (depending on the week 1, 2, or 3 of the visited cluster), one to 3 rheumatologists, and one to 3 laboratory technicians for blood sampling. They went to the same cluster on 3 consecutive Fridays to collect data from those who were absent the previous Friday. In each cluster, 95 to 100 households (according to the population density) entered the study.

Every interviewer started data collection by introducing him/herself and then went on to applying the CCQ. After completing the CCQ of each family, the questionnaires were submitted to the team's head. The head would check the CCQ and if there was a positive case that needed examination, he/she was introduced to the rheumatology fellow. The subjects were introduced to laboratory technicians if the rheumatology fellow ordered any laboratory test. They were also sent to the nearest radiology center in each field as needed.

Diagnoses and definitions. The CCQ, examination sheet, and paraclinical results of all positive cases that were examined by a rheumatology fellow were reviewed by one of the rheumatology professors of the Rheumatology Research Center to confirm the final diagnosis of the subject. Diagnosis was based upon clinical judgment.

Quality control and monitoring. All the interviewers, technicians, and rheumatology fellows received regular quality control visits from the proj-

ect manager and supervisors who checked their performance. Special evaluation checklists were used for both direct observing of interviewers and for readministering some of the CCQ questions. All of the family folder forms, CCQ, and examination sheets were checked by the team's head in the field. All the questionnaires were checked again during the enumeration process in the Rheumatology Research Center and were reviewed for any missing data or mistakes. They were rectified either by the interviewer himself/herself (by going to the subject and asking the missed questions the next week) or by telephone contact. Relevant weekly feedback was given to the observers according to all of the monitoring and evaluation processes.

Ethical issues. The study proposal was approved by the national Ethics Committee on Medical Research of the Ministry of Health and Medical Education. All subjects were informed about the study's goal and methods. They were enrolled in the study after giving informed consent. Participants could withdraw from the study at any stage (interview, examination, paraclinical tests). All of the paraclinical costs were paid from the project budget. All subjects who had examination were sent a brief report about their health status and relative educational notes. Laboratory results and radiographs were also sent to the subjects.

Data analysis. Five percent of the data, at the end of each day of data entry, were controlled for quality control.

Data were weighted (poststratification weight) according to the weight of population census in Tehran (1996). It was calculated by the formula "Wij = Nij/nij" where "W" is the weight, "i" is the sex group, "j" the age group, "N" the number of people in the target group of the Tehran census, and "n" the same group in the Tehran COPCORD study. Stata program Version 8 (Stata, College Station, TX, USA) was used for all analyses.

RESULTS

Study period. The COPCORD study started February 27, 2004. The data collection phase took 18 months (including a 3-month stop because of Ramadan and the New Year holidays). The study (prevalence phase) finished in September 2005.

General data. We visited 4096 houses. The number of target respondents was 13,741. Among them, 582 refused the interview, and 2868 were out of reach after 3 consecutive weekly visits to their house. Thus, the total number of interviewed persons with completed questionnaires was 10,291. The male to female ratio was 0.9 to 1, with 4878 male (47.4%) and 5413 female subjects (52.6%). The 1996 Tehran census showed a male to female ratio of 1.04 to 1, with 51.1% male and 48.9% female. Caucasians comprised 71.4%, Turks 23.1%, Semites 0.3%, and mixture of different ethnicities 5.2%. There were 39.7% in the age group 15–29 years, 21.3% 30–39 years, 17.4% 40–49 years, 9.9% 50–59 years, 6.7% 60–69 years, and 4.9% aged 70 years and above. The proportion of teenagers and young adults was very high: 39.7% aged 15 to 29 years. The proportion of people over age 50 years was rather low, 21.5%. The proportion of age ranges was slightly different in the 1996 Tehran census (Table 1, Figure 1). The percentage of illiterate persons was 7.1%. The percentage at the university level was 19.9% (Table 2).

Musculoskeletal complaints during the past 7 days. Overall complaints (Table 3) were detected in 41.9% of the interviewed subjects (pain 41.5%, swelling 13.5%, and stiffness 26%). The age and sex distribution of pain, swelling, and stiffness is shown in Table 4.
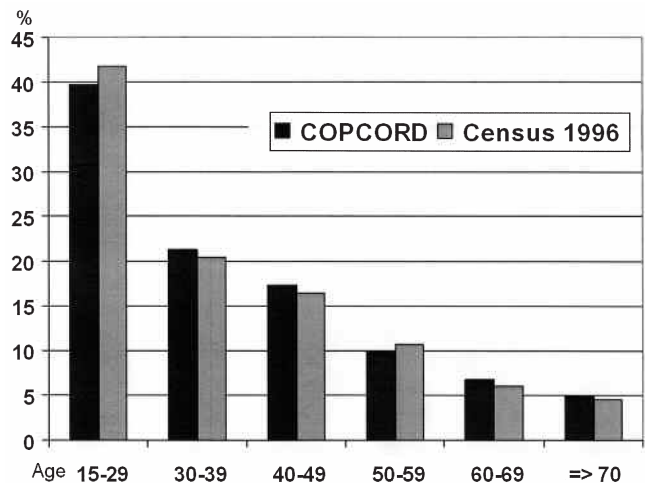

Figure 1. Age distributions, comparing the COPCORD study, completed in September 2005, and the 1996 Tehran census.

Table 1. Age distribution.

Age, yrs	N	%	95% CI	Census %
15-29	4085	39.7	38.8–40.6	41.7
30-39	2195	21.3	20.5–22.1	20.5
40-49	1793	17.4	16.7–18.1	16.5
50-59	1022	9.9	9.3–10.5	10.7
60-69	688	6.7	6.2–7.2	6.0
70 and over	507	4.9	4.5–5.3	4.6
Undetermined	1	—	—	
Total	10291			

Census: 1996 Tehran Census.

Table 2. Educational level.

	N %	95% CI
Illiterate	732 (7.1)	6.6–7.6
Primary school (unfinished)	569 (5.5)	5.1–5.9
Primary school	874 (8.5)	7.9–9.1
Secondary school (unfinished)	2505 (24.3)	23.5–25.1
Secondary school (diploma)	3393 (33.0)	32.1–33.9
University	2046 (19.9)	19.1–20.7
Theological studies	9 (0.1)	—
Other	163 (1.6)	1.3–1.9

Table 3. Musculoskeletal complaints during the past 7 days.

		Men	Women	Total
Pain,	n (%)	1685 (33.7)	2784 (49.8)	4469 (41.5)
	95% CI	31.4–36.0	47.2–52.4	39.2–43.9
Swelling,	n (%)	422 (8.2)	1098 (19)	1520 (13.5)
	95% CI	7.3–9.2	17.6–20.4	12.5–14.4
Stiffness,	n (%)	991 (19.5)	1852 (32.9)	2843 (26.0)
	95% CI	17.7–21.2	30.8–34.9	24.2–27.7
Overall,	n (%)	1708 (34.1)	2802 (50.2)	4510 (41.9)
	95% CI	31.8–36.4	47.5–52.8	39.5–44.3

Table 4. % Musculoskeletal complaints during the past 7 days: age distribution. Data are percentages.

	Pain			Swelling			Stiffness		
Age	Men	Women	All	Men	Women	All	Men	Women	All
15–29	24.1	31.8	27.9	5.3	5.3	5.3	12.4	16.6	14.5
30–39	35.2	51.5	43.3	5.9	16.6	11.2	20.2	34.4	27.2
40–49	38.6	61.3	49.6	9.9	27.2	18.3	23.6	41.6	32.3
50–59	41.6	72.6	56.2	12.2	36.5	23.6	25.5	52.2	38.1
60–69	47.1	80.2	62.4	15.1	50.8	31.6	30.0	64.9	46.1
70 and over	66.0	85.9	76.2	25.2	56.4	41.2	42.3	67.1	55.0

Table 5. Musculoskeletal complaints during the past 7 days: joint distribution. Data are percentages (95% CI).

	Men	Women	All
Shoulder	9.8 (8.8–10.8)	19.6 (18.1–21.0)	14.5 (13.5–15.6)
Elbow	4.3 (3.7–4.9)	9.2 (8.4–10.1)	6.7 (6.2–7.2)
Wrist	5.6 (4.9–6.3)	14.7 (13.6–15.8)	10.0 (9.3–10.7)
Hand	4.9 (4.3–5.6)	14.1 (12.7–15.5)	9.4 (8.5–10.3)
Hip	3.7 (3.1–4.3)	10.6 (9.6–11.6)	7.1 (6.4–7.7)
Knee	19.5 (18.1–20.9)	31.8 (29.6–33.9)	25.5 (23.9–27.1)
Ankle	6.7 (5.9–7.6)	13.0 (12.1–13.9)	9.8 (9.1–10.5)
Toes	3.7 (3.1–4.3)	8.7 (7.7–9.7)	6.1 (5.5–6.8)
Cervical	8.8 (7.8–9.7)	18.3 (16.9–19.7)	13.4 (12.4–14.4)
Dorso–lumbar	14.8 (13.5–16.1)	29.1 (27.3–31.0)	21.7 (20.2–23.2)
All sites	34.1 (31.8–36.4)	50.2 (47.5–52.8)	41.9 (39.5–44.3)

Table 6. Osteoarthritis.

	Men n (%*)	Women n (%*)	All n (%*)
Total	553 (12.3)	1098 (21.2)	1651 (16.6)
Knee OA	499 (11.0)	1033 (19.9)	1532 (15.3)
Hand OA	67 (1.4)	242 (4.5)	309 (2.9)
Hip OA	16 (0.35)	13 (0.28)	29 (0.32)
Neck OA	55 (1.1)	130 (2.4)	185 (1.7)

* Adjusted percentages.

Table 7. Other mechanical disorders.

	Men n (%*)	Women n (%*)	All n (%*)
Chondromalacia patellae	93 (2.5)	208 (4.9)	301 (3.7)
Lumbago	472 (11.0)	968 (20.2)	1440 (15.4)
Sciatica	29 (0.71)	50 (1.0)	79 (0.86)
De Quervain tenosynovitis	6 (0.12)	16 (0.36)	22 (0.23)
Trigger finger	2 (0.05)	19 (0.38)	21 (0.21)
Carpal tunnel syndrome	12 (0.24)	143 (2.37)	155 (1.27)
Tennis elbow	34 (0.80)	87 (1.66)	121 (1.21)
Golf elbow	10 (0.25)	40 (0.78)	50 (0.51)
Shoulder rotator cuff	89 (2.0)	152 (3.0)	241 (2.5)
Frozen shoulder	17 (0.35)	37 (0.73)	54 (0.54)
All periarthritis	147 (3.3)	301 (6.0)	448 (4.6)

All periarthritis: all tendonitis, tenosynovitis, and bursitis. * Adjusted percentages.

The site distribution for any complaint (pain, swelling, stiffness) was shoulder 14.5%, elbow 6.7%, wrist 10%, hand 9.4%, hip 7.1%, knee 25.5%, ankle 9.8%, toes 6.1%, cervical spine 13.4%, and dorsolumbar spine 21.7% (Table 5).

Diagnosed diseases. Degenerative joint diseases (Table 6) were detected in 16.6% of subjects: cervical spondylosis in 1.8%, knee osteoarthritis (OA) 15.3%, hand OA 2.9%, and hip OA 0.32%. Other mechanical disorders (Table 7) were chondromalacia patellae in 3.7%, low back pain 15.4%, sciatica 0.86%, de Quervain tenosynovitis 0.23%, trigger finger 0.21%, carpal tunnel syndrome 1.27%, tennis elbow 1.21%, golfer's elbow 0.51%, shoulder rotator cuff tendonitis 2.5%, and frozen shoulder 0.54%. All findings of periarthritis (tendonitis, tenosynovitis, and bursitis) were detected in 4.6% of the population. Inflammatory disorders (Table 8) were rheumatoid arthritis (RA) 0.33%, seronegative spondyloarthropathies 0.23%,

Table 8. Inflammatory disorders.

	Men n (%*)	Women n (%*)	All n (%*)
Rheumatoid arthritis	5 (0.09)	30 (0.58)	35 (0.33)
Seronegative spondyloarthropathies	11 (0.27)	7 (0.20)	18 (0.23)
Ankylosing spondylitis	7 (0.17)	5 (0.07)	12 (0.12)
Systemic lupus erythematosus	—	3 (0.08)	3 (0.04)
Behcet's disease	3 (0.07)	4 (0.08)	7 (0.08)

* Adjusted percentages.

Table 9. Comparison between raw and adjusted data (%).

	Raw Data	Adjusted Data
Musculoskeletal complaint	44.1	41.9
Knee pain	26.6	25.5
Dorso-lumbar pain	22.9	21.7
Shoulder	15.3	14.5
Cervical pain	14.1	13.4
Osteoarthritis (total)	16.0	16.6
Knee osteoarthritis	14.9	19.9
Neck osteoarthritis	1.8	2.4
Lumbago	14.8	15.4
Carpal tunnel syndrome	1.54	1.27
Tennis elbow	1.18	1.21
Golf elbow	0.49	0.51
Shoulder rotator cuff	2.34	2.50
Frozen shoulder	0.50	0.54
Rheumatoid arthritis	0.34	0.33
Seronegative spondyloarthropathy	0.23	0.23
Systemic lupus erythematosus	0.03	0.04
Behcet's disease	0.07	0.08
Fibromyalgia	0.64	0.69
Gout	0.11	0.13

ankylosing spondylitis 0.12%, systemic lupus erythematosus 0.04%, and Behçet's disease 0.08%. Fibromyalgia was discovered in 0.69% and gout in 0.13% of the studied population.

Raw and adjusted data. As mentioned in Materials and Methods, raw data were adjusted according to the Tehran census of 1996. Table 9 shows the comparison between the raw[14] and the adjusted data.

DISCUSSION

Comparison of the male to female ratio from the COPCORD study and from the 1996 census of Tehran shows a slight difference between them. The same was found for the age distribution. These differences were the reason for the adjustment of the COPCORD study data. The figures obtained by the large COPCORD urban study are near those found in the pilot study and those in the rural study (Table 10). The prevalence rate of pain was 48.1% in the rural study (from 1993), while in this study it is 41.9%. Although the figures are close, the difference is statistically significant. The odds ratio is 1.3 (95% confidence interval 1.2-1.4).

Table 10 shows the comparison of different COPCORD studies in the APLAR region (Asia and Pacific Area)[26]. Knee OA has a high prevalence in Iran as in most Asian countries, in contrast to hip OA[26]. Soft tissue rheumatism was seen in 4.6% in Iran. It was reported to range from 1.5% (Thailand) to 7.4% (Australian Aboriginals). A very high figure was reported from Vietnam, 18.2% (Table 10). RA prevalence of 0.33% is much lower than in Western countries[27-30], like many Asian countries. In contrast, Behçet's disease, with a prevalence of 0.08%, was the second highest figure in the world after Turkey[31,32]. Gout was seen in 0.13% of subjects in Iran. In many Asian countries the figure is less than 0.3%, except Indonesia and urban

Table 10. COPCORD studies in APLAR region (Asia and Pacific Area).

	n	Pain	LBP	Neck Pain	Knee Pain	OA	STR	FM	RA	SPA	CTD	Gout
Australia	1437	34	22	17	15	8.2	5.8		0.70	0.21		1.5
Australia Aboriginal	847	33	12.5		11.2	5.5	7.4		0	0.5	0	4
Bangladesh rural	2635	26.9	6.6			7.5	2.7	4.4				
Bangladesh urban slum	1317	24.9	9.9			9.2	2.5	3.2				
Bangladesh urban affluent	1259	27.9	9.2			10.6	3.3	3.3				
China – Shanghai	6584		5.6	2.4	7		3.4		0.47	0.11	0.06	0.22
China – Beijing	4192		35	5	30				0.34	0.26	0.01	
China – Shantou	5057		13.1	2	2.6				0.32	0.26	0.02	
China – Chenghai	2040		10.2	4.1	6.5							
Indonesia urban	1071		23.3	11.8					0.3			
Indonesia rural	4683		15.1	4.8					0.2			0.81
India	4092	18.2	11.4	6	13.2	5.8	5.5		0.5			0.12
Iran (rural study)	2502	48.1	18.5	6.4	17.9	16.1	6.4	1.3	0.32	0.08		0.28
Iran (pilot study)	284	34.5	22.2	13.7	26.1	14.5	2.4					
Iran COPCORD (urban)	10291	41.9	21.7	13.4	25.5	16.6	4.6	0.7	0.33	0.23		0.13
Kuwait	7670											
Malaysia	2594	21.1	11.6	6.1					0.15	0.12		
Pakistan	2090	14.8	1.9			3.7	1.9	2.1	0.55	0.10	0.05	0.14
Philippines rural	846	14.5	11.3	7.3	7				0.2			0.6
Philippines urban	3006		2.1			4.1	3.8	0.2	0.17	0.03		0.13
Thailand	2463	17.6	4	3.4	5.7	11.3	1.5		0.12	0.12	0.08	0.16
Vietnam	2119		11.2		18.2	4.1	15.4		0.28		0.09	0.14

n: population interviewed; LBP: low back pain; OA: osteoarthritis; STR: soft tissue rheumatism; FM: fibromyalgia; RA: rheumatoid arthritis; SPA: seronegative spondyloarthropathies; CTD: connective tissue diseases.

Philippines (Table 10). The highest figure from APLAR countries was seen in Australia (1.5%), especially among Australian Aboriginals (4%).

Our study has some weak points and limitations. In the CCQ, some questions requiring the interviewed individual to recall something may not be precise enough. As an example, data on musculoskeletal pain, especially its duration, may vary if the person is interviewed a second time. The response rate of our study was 75%. This may influence some results because nonresponders were mainly young persons not at home when the interviewer arrived, although in such cases, interviewers returned 2 other consecutive weeks to look for them. It is therefore possible that some disease prevalences were overestimated. However, some of these errors may have been corrected by the adjustment of data for age and sex. The study period was 18 months. Each subject was seen and evaluated in 1 day, minimizing the possibility of missing an acute event.

Tehran as the site of our study best represents the Iranian urban population and its ethnic distribution. The random selection of clusters from the 22 districts of Tehran gave a fair sample representation of the whole population of the city, especially when results were adjusted for age and sex distribution.

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